GOVERNMENT OF TANZANIA

Prime Minister's Office (PMO)

Agriculture and Fisheries Development Programme (AFDP)

Environmental and Social Management Framework (ESMF)

DRAFT REPORT

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Contents

Executive Summary ix

1 Introduction 1
1.1 Background to the Agriculture and Fisheries Development Programme (AFDP) 1
1.2 Goal and Objectives of AFDP 2
1.3 Rationale and Objectives of this ESMF 2
1.4 Approach and Methodology used for the Preparation of the ESMF 3
1.5 Stakeholder Consultations 4
1.6 Disclosure of this ESMF 4
1.7 Limitations and Assumptions 5
1.8 Report Presentation 6

2 Description of the Agriculture and Fisheries Development Programme 7
2.1 Overview of the Programme Area Characteristics 7
2.2 Target Groups and Targeting Strategy 7
2.3 Programme Components 8
2.4 Institutional Arrangements and Responsibilities for Programme Implementation 12

3 Institutional, Policy and Legal Framework for Environmental Management in Tanzania 14
3.1 Policy, Legal and Institutional Framework 14
3.1.1 Tanzania Mainland 14
3.1.2 Zanzibar 17
3.2 International Conventions and Treaties 18
3.3 IFAD Safeguard Polices 20
3.4 Comparison of GoT and IFAD Policy Requirements 26

4 Lessons Learnt 31
4.1 Lessons from IFAD-Supported Projects 31
4.2 Lessons from other Development Partner Projects 32

5 Environmental and Social Overview 34
5.1 Administrative Structure 34
5.2 Physical Environment 34
5.2.1 Climate, Rainfall and Temperature 34
5.2.2 Landscapes 35
5.2.3 Water Resources 35
5.2.4 Soils 37
5.3 Biological Environment 37
5.3.1 Terrestrial Ecosystems 37
5.3.2 Coastal and Marine ecosystems 38
5.3.3 Tanzania's Exclusive Economic Zone 38
5.3.4 Protected Areas 38
5.3.5 Fisheries 39
5.4 Socio-Economic Environment 41
5.4.1 Demographic Characteristics 41
5.4.2 Land Tenure 42
5.4.3 Land Use 42
5.4.4 Health Status of Project Communities 42
5.4.5 Education Status of Subproject Communities 43
5.4.6 Access to Services 43
5.4.7 Economic Activities in the Programme Area 43
5.4.8 Household Income in the Programme Area 44
5.4.9 Physical Cultural Resources 44
5.5 Gender 44

6 Stakeholder Consultations 46

6.1 Background and Rationale 46
6.2 Consultation Locations and Stakeholder Categories 47
6.3 Issues Discussed during Consultations 47
6.4 Summary of Outcomes of Stakeholder Consultations 47
6.5 Other Concerns 49
6.6 Priorities for AFDP Interventions 49

7 Potential Environmental, Social and Climate-Related Impacts of AFDP Interventions and their Mitigation 50
7.1 Benefits of AFDP 50
7.2 Potential Environmental, Social and Climate-Related Risks and Impacts from AFDP Interventions 52
7.3 Environmental, Social and Climate Management Plan 61

8 Climate Risk Assessment 74
8.1 Introduction 74
8.2 Trend and Climate Hazard Analysis 74
8.2.1 Changes in Temperature 75
8.2.2 Changes in precipitation 77
8.2.3 Coastal and Marine Ecosystems and Related Climate Change Impacts 80
8.3 Main Findings for Targeted Value Chains 81
8.3.1 Crop Seed Production 81
8.3.2 Aquaculture 81
8.3.3 Fisheries 82
8.3.4 Seaweed Farming 82

9 Environmental, Social and Climate Change Management for AFDP 83
9.1 Institutional Framework for Environmental Management in Tanzania Mainland 83
9.2 Institutional Framework for Environmental Management in Zanzibar 86
9.3 National EIA Procedures 87
9.3.1 EIA Procedure in Tanzania Mainland 87
9.3.2 EIA Procedure in Zanzibar 89
9.3.3 Permitting and Licensing Requirements for AFDP Activities 91
9.4 Environmental, Social and Climate Change Management Procedures for AFDP 92
9.4.1 Implementation and Coordination 92
9.4.2 Screening 92
9.4.3 Environmental, Social and Climate Safeguards Documentation 95
9.4.4 Disclosure of ESIAs and Project Briefs 101
9.4.5 Review and Approval of ESIAs, Project Briefs and IPMP 101
9.4.6 Gender Based Violence and Sexual Exploitation and Abuse 101
9.4.7 Grievance Redress Mechanisms 102
9.4.8 Monitoring 104
9.4.9 Quarterly and Annual Reviews 106
9.4.10 Reporting 106
9.4.11 Annual Monitoring Audits 107
9.5 Summary of Processes and Responsibilities 107

10 Capacity Building 109
10.1 Existing Capacity 109
10.2 Training Topics 109
10.3 Target Audience 110
10.4 Training Approach 110
10.5 Training Summary 110

11 ESMF Implementation Budget 112

12 Summary of Key Issues Arising and Recommendations 113
12.1 Project Implementation Arrangements 113
12.2 Project Categorisation 113

12.3 Climate Risk Analysis 113
12.4 Physical and Economic Displacement 113
12.5 Indigenous Peoples 114
12.6 Community Involvement in Subproject Implementation 114
12.7 Capacity Building 114

Annexes 115
Annex 1: References 116
Annex 2: List of Stakeholders Consulted 120
Annex 3: Terms of Reference for the Environmental, Social and Climate Specialist for the PCU 124
Annex 4: Screening and Categorisation of AFDP Interventions 126
Annex 5: Guidelines for an Integrated Pest Management Plan 132
Annex 6: Stakeholder Identification Matrix 146
Annex 7: Study Team, Study Itinerary and ESMF Timelines 152

List of Tables

Table 2-1: AFDP Target Areas 7
Table 2-2: AFDP Components 8
Table 3-1: Policy, Legislative and Institutional Framework for Environment, Climate and Social Inclusion in Tanzania Mainland 14
Table 3-2: Policy, Legislative and Institutional Framework for Environment, Climate and Social Inclusion in Zanzibar 17
Table 3-3: International and Regional Treaties and Conventions 18
Table 3-4: Comparison of Government of Tanzanian and IFAD Requirements 26
Table 5-1: Basin-wise Renewable Water Availability in Tanzania Mainland 36
Table 5-2: Stock Status of Tuna and Tuna-like Fish found in the Tanzania EEZ 40
Table 6-1: Categories and Number of Stakeholders Consulted 47
Table 6-2: Summary of Stakeholder Consultations 48
Table 7-1: AFDP Benefits 50
Table 7-2: Typically Anticipated Risks and Adverse Impacts of AFDP Supported Activities 53
Table 7-3: AFDP Environmental, Social and Climate Management Plan 62
Table 9-1: Screening Categorisation for AFDP Interventions 93
Table 9-2: Typical Performance Monitoring Indicators 104
Table 9-3: Typical Results Monitoring Parameters 106
Table 9-4: ESMF Procedures and Responsibilities 107
Table 10-1: Summary of Proposed Trainings 110
Table 11-1: ESMF Implementation Budget (USD) 112

List of Figures

Figure 3-1: Social Environmental and Climate Screening Flow Diagram....23
Figure 5-1: Drainage Basins....36
Figure 8-1: The average of maximum temperature during baseline period (1971–2000), present century (2011–2040), and the change in temperature during present under both RCP 8.5 (upper) and RCP 4.5 (lower)....76
Figure 8-2: The average of maximum temperature during baseline period (1971–2000), mid- century (2041–2070), and the change in temperature during mid-century under both RCP 8.5 (upper) and RCP 4.5 (lower)....76
Figure 8-3: The average of maximum temperature during baseline period (1971–2000), end century (2071–2100), and the change in temperature during end century under both RCP 8.5 (upper) and RCP 4.5 (lower)....77
Figure 8-4: Precipitation in mm/day during baseline period (1971–2000), present century (2011–2040), and change in precipitation under both RCP8.5 (upper) and RCP 4.5 (lower)....79
Figure 8-5: Precipitation in mm/day during baseline period (1971–2000), present century (2041–2070), and change in precipitation under both RCP8.5 (upper) and RCP 4.5 (lower)....79
Figure 8-6: Precipitation in mm/day during base period (1971–2000), present century (2071–2100), and change in precipitation under both RCP8.5 (upper) and RCP 4.5 80
Figure 9-1: EIA Process in Tanzania Mainland....89
Figure 9-2: EIA Process in Zanzibar 91

Acronyms and Abbreviations

AEZ	Agro Ecological Zone
ASA	Agricultural Seed Agency
ADC	Aquaculture Development Centre
AFDP	Agriculture and Fisheries Development Programme
ASDP-II	Second Agriculture Sector Development Programme
COVID-19	Coronavirus Disease 2019
CRA	Climate Risk Analysis
DAO	District Agriculture Officer
DCDO	District Community Development Officer
DEMO	District Environment Management Officer
DFO	District Fisheries Officer
DFT	District Facilitation Team
DNRO	District Natural Resources Officer
DoE	Director of Environment (Vice President's Office)
DSFA	Deep Sea Fishing Authority
EEZ	Exclusive Economic Zone
EGS	Early generation seed
EIA	Environmental [and Social] Impact Assessment
EIS	Environmental Impact Statement
EMA	Environmental Management Act of 2004
ENRM	Environment and Natural Resources Management
ESC	Environmental, Social and Climate
ESCMP	Environmental, Climate and Social Management Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAD	Fish aggregating device
FAO	Food and Agriculture Organisation of the United Nations
FPIC	Free Prior and Informed Consent
ha	Hectare
HH	Household
GALS	Gender Action Learning System
GBV/SEA	Gender Based Violence / Sexual Exploitation and Abuse
GDP	Gross Domestic Product
GO	Grievance Officer
GoT	Government of Tanzania
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
ICT	Information and communications technology
IFAD	International Fund for Agricultural Development
IFC	[World Bank Group's] International Finance Corporation
IOTC	Indian Ocean Tuna Commission

IPMP	Integrated Pest Management Plan
ISTA	International Seed Testing Association
ITCZ	Inter-tropical Convergence Zone
km	Kilometre
km2	Square kilometres
l/s	Litres per second
m3	Cubic metre
masl	Metres above sea level
MCM	Million cubic metres
MoA	Ministry of Agriculture
MANRLF	Ministry of Agriculture, Natural Resources, Livestock and Fisheries of Zanzibar
ME&KM	Monitoring & Evaluation and Knowledge Management
MLF	Ministry of Livestock and Fisheries
mm	Millimetre
MNRT	Ministry of Natural Resources and Tourism
MRALG	Ministry of Regional Administration and Local Government
MRALGSD-ZNZ	Ministry of Regional Administration, Local Government and Special Departments
MOFP-TZ	Ministry of Finance and Planning Tanzania Mainland
MOFP-ZNZ	Ministry of Finance and Planning Zanzibar
MOW	Ministry of Water
MSP	Marine Spatial Plan
MT	Metric tonnes
NBS	National Bureau of Statistics
NEMC	National Environment Management Council
PB	Project Brief
PCB	Polychlorinated biphenyl
PCU	Programme Coordination Unit
PDR	Programme Design Report
PHS	Plant Health Service, Ministry of Agriculture, Tanzania Mainland
PIM	Programme Implementation Manual
PMO	Prime Minister's Office
PPD	Plant Protection Division, Ministry of Agriculture, Livestock and Fisheries, Zanzibar
PSC	Programme Steering Committee
PTAC	Ministerial Programme Technical Advisory Committee
RGZ	The Revolutionary Government of Zanzibar
SEA	Strategic Environmental Assessment
SECAP	[IFAD's] Social Environmental and Climate Assessment Procedures
SEP	Stakeholder Engagement Plan
SME	Small and Medium Enterprises
SOP	Standard Operating Procedure
SUGECO	Sokoine University Graduate Entrepreneurs Cooperative

SWIOFC	South West Indian Ocean Fisheries Commission
SWIOFISH	World Bank's South West Indian Ocean Fisheries Project
TADB	Tanzania Agricultural Development Bank
TARI	Tanzania Agricultural Research Institute
TAFICO	Tanzania Fisheries Cooperative
TAFIRI	Tanzania Fisheries Research Institute
TASTA	Tanzania Seed Trade Association
TMA	Tanzania Meteorological Agency
TOSCI	Tanzania Official Seed Certification Institute
TZ	Tanzania Mainland
URT	United Republic of Tanzania
USD	United States Dollar
WIO	Western Indian Ocean
ZAFICO	Zanzibar Fisheries Cooperative
ZEMA	Zanzibar Environmental Management Authority
ZNZ	Zanzibar

Map 1: Agriculture and Fisheries Development Programme Project Area

The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.

Map compiled by IFAD | 24-03-2020

Executive Summary

INTRODUCTION

Over 75% of rural households in Tanzania depend on beans and other pulses for daily subsistence and beans account for 71% of leguminous protein in diets. Sunflower is grown by about 4 million households. More than 30% of the animal protein consumed in Tanzania comes from fish. Agricultural imports have been increasing, with food imports representing the largest share (80%) of total merchandise imports. There is a growing regional export market for beans of different types, estimated at more than 800,000 metric tons (MT) against current export of about 250,000 MT. Tanzania has an estimated demand of 500,000 MT of edible oils, while the total domestic production is estimated at 180,000 MT.

Currently, fish production for 2019/2020 stands at 392,932.82 MT from marine and inland waters. About 85% of the country's fisheries production comes from freshwater inland lakes mainly Lake Victoria, with 14% from marine sources while aquaculture currently contributes just 1%, but with huge undeveloped potential. It is estimated that about 714,000 tons of fish is required to increase per capita fish consumption to 10.5 kg from the current 8.5 kg. This demands an additional 321,000 tons of fish in order to meet this consumption level. On the other hand, the growing export of fish to both international as well as regional markets averages slightly over 30,000 tons, implying that local fish production must be increased by 81.7% to meet the export needs.

One concern is the impact of COVID-19 on Tanzania's fragile food systems and the resultant effect on food production, household food and nutrition security and resilience as well as the country's ability to respond in times of crisis. There are signs of emerging disruptions on the upstream and downstream links of the food and agriculture chains in Tanzania. Therefore, public investments in programmes promoting access to high quality inputs (seeds, fertilizers, fingerlings) and in processing and improving farmers' access to markets are crucial in the post COVID-19 situation.

The second Agricultural Sector Development Strategy II (ASDS II 2015/16–2024/25) aims to address these challenges, by transforming the agricultural sector (crops, livestock & fisheries) towards higher productivity, commercialization level and smallholder farmer income for improved livelihood, food security and nutrition. To support the country in achieving the objectives of the ASDS II, the GoT has requested the International Fund for Agricultural Development (IFAD) to finance the Agricultural and Fisheries Development Programme (AFDP). This new programme will provide support to two priority areas of the ASDP II, by contributing to address key sector challenges in the seeds, fisheries and aquaculture value chains, while strengthening institutional capacities of key public institutions and private sector stakeholders.

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

Most of the proposed interventions under AFDP will have some significant impacts that can be readily mitigated or remedied, and therefore fall into Category B. These include crop seed development activities (involving small scale irrigation <100ha, seed testing and certification laboratories and a training centre), aquaculture, mariculture involving the establishment of training centres and technologies to improve seaweed farming. However, the proposed deep sea (tuna) fisheries and related processing activities, may have significant environmental and social impacts which may not be easily remedied and would require more detailed environmental and social analysis. Moreover, any impact on their stocks will extend over a large area beyond territorial waters, and stock assessments

are limited available data, rendering these interventions as Category A. The Programme has therefore been accorded Category A.

At this project design stage, the general nature of activities to be supported are known, but specific details of the various interventions are yet to be developed. SECAP requires that in such cases, an Environmental and Social Management Framework (ESMF) must be prepared in order to guide the preparation of Environmental and Social Impact Assessments (ESIAs) or Project Briefs (PBs) / Environmental and Social Management Plans (ESMPs) for the subprojects and interventions.

This ESMF provides guidance to examine the risks and impacts of the various Programme interventions and activities. It sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts. The ESMF contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures and appropriate roles, responsibilities and capacity for managing, mitigating and monitoring environmental and social concerns related to the Programme. It includes information on the area in which activities are expected to be sited, including any potential environmental and social vulnerabilities of the area; and on the potential impacts that may occur and potential mitigation measures. It also includes institutional mechanisms to allow the lead agencies to implement the recommended measures.

PROJECT DESCRIPTION

Project Location

The programme targets a total of 42 districts in 10 regions of the central Tanzania Mainland corridor and four marine conservation areas in Unguja and Pemba, Zanzibar. AFDP will focus on drier agro-ecological zones with unimodal rainfall, targeting sustainable intensification and diversification of more vulnerable production and farming systems (crops and aquaculture), highly susceptible to climate variability and change. The programme will also promote sustainable fisheries management for improved livelihoods of coastal fishing communities in Zanzibar and Tanzania Mainland.

Project Components

AFDP is designed as an integrated programme, consolidating multiple ASDP II interventions into a single programme, with a related set of outcomes. The three AFDP components are:

- ***Component 1: Enhanced agricultural productivity of crop seeds and fisheries.*** The expected outcome of this component is increased climate-resilient productivity and production from crop seed and fish value chains. It will be achieved by focusing investments in two sub-components, namely (i) crop seed systems development and (ii) fisheries and aquaculture development.

- ***Component 2: Improved market access, value addition and private sector development***. The expected outcome of this component is improved marketing and value addition of crop seeds and fish products. It will be achieved by combining investments in (i) quality crop seed use and business development and (ii) fish market development and value addition.

- ***Component 3: Programme Management and Coordination***. This component will support (i) programme management and coordination, and (ii) monitoring and evaluation (M&E), communication and knowledge management.

Programme Implementation Arrangements

The overall programme coordination will be under the Prime Minister's Office (PMO), which is responsible for coordinating the implementation of the Second Agriculture Sector Development Programme (ASDP II). In Tanzania Mainland, the Ministry of Agriculture (MoA) and Ministry of Livestock and Fisheries, and in Zanzibar the Ministry of Agriculture, Natural Resources, Livestock and Fisheries will be responsible for Programme implementation. The Programme will establish a semi-autonomous Programme Coordination Unit (PCU) to complement existing ASDP II coordination and management structure. A smaller Programme Coordination Team (PCT) will be established in Zanzibar. Field implementation will be based on performance contracts with key government institutions, selected implementing partners and service providers. Implementation at the district level will use the existing structures of the Local Government Authority that comprise specialist for fisheries, aquaculture and crop seeds, who will work closely with the existing District Facilitation Teams.

INSTITUTIONAL, POLICY, LEGAL AND FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT

The United Republic of Tanzania has several policies, legislations and institutional frameworks to regulate and address environmental, climate and social inclusion thematic areas for both sides of the union. These are summarized in the table below.

Table E-1: Policy, Legal and Institutional Framework

Thematic Area	Policy and Legal Framework, and Key Institutions	
	Tanzania Mainland	**Zanzibar**
Environment and climate change	The Environmental Management Act 2004, Occupational Health and Safety Act, 2003, Public Health Act, 2009, Forest Act No. 14 of 2002; Environmental Impact Assessment and Audit (Amendment) Regulations of 2018, Environmental Management (Solid waste Management) Regulation, 2007, Strategic Environmental Assessment Regulations of 2008, The Environmental Management (Water Quality Standards) Regulations, 2007, Environmental Management (Registration of Environmental Experts) Regulations (2005), The Environmental Management (Fee and Charges) (Amendment) Regulations, 2019, National Environmental Policy (1997), National Forests Policy (1988), National Climate Change Strategy, 2012, National Adaptation Programme of Action, 2007, National Integrated Coastal Environment Management Strategy (2003), Disaster Management Act, 2015. Key Institutions Vice President's Office - Division of Environment National Environment Management Council National Climate Change Technical Committee and National Climate Change Steering Committee	Zanzibar Environmental Management Actof 2015, Environmental Assessment Regulations, 2017, Conservation Areas, Reserves, Parks and Sanctuaries Act, 1994, Territorial Sea and Exclusive Economic Zone Act, 1989, Deep Sea Fishing Authority Act, 2007, National Environmental Policy for Zanzibar (2013), The Establishment of Zanzibar Nature Conservation Areas Management Unit Act (1999), Forest Resources Management and Conservation Act (1996), National Forest Policy for Zanzibar (1995), National Disaster Management Policy, 2011 Key Institutions 1st Vice President-Department of Environment, Ministry of Land, Water, Energy and Environment, Zanzibar Environmental Management Authority (ZEMA)
Agriculture	The Seeds Act, 2003, Village Land Act No. 5 of 1999, Plant Protection Act of 2002, National Land Policy (1995), Agricultural and Livestock Policy (1997), Irrigation Policy (2010), Pesticides Control Regulations, 1984, Industrial and Consumer Chemicals (Management and Control) Act, 2003, Land Use Planning Act, 2007, National Agriculture Policy (2013, Fertilizer(Bulk Procurement)Regulations,2017, Plant Breeders Rights Act of 2012, The Seeds (Control Of Quality Declared Seeds) Regulations, 2020,The Seeds Regulations, 2007. Agricultural Sector Development Strategy II, 2017, Tanzania Agriculture and Food Security Investment Plan (TAFSIP) 2011-12 to 2020-21, Tanzania Development Vision 2025, Five Year Development Plan 2016/17 – 2020/21, Tanzania Agricultural Research Institute Act, 2016	Land Tenure (Amendment) Act (2003), Agricultural Sector Policy, 2003 Zanzibar Agricultural Transformation For Sustainable Development, 2010-2020, Zanzibar Vision 2020, Zanzibar Strategy for Growth and Reduction of Poverty III, or MKUZA III, 2016-2020, Key Institutions Ministry of Agriculture, Natural Resource, Livestock and Fisheries Management

Thematic Area	Policy and Legal Framework, and Key Institutions	
	Tanzania Mainland	**Zanzibar**
	Key Institutions Ministry of Agriculture, ASA, TOSCI, TARI	
Fisheries	Fisheries Act, 2003, Fisheries Regulations of 2005; Marine Parks and Reserves Act, 1994, Water Resources Management Act, 2009, Water Utilization and Sanitation Act of 2009, National Water Policy, 2002, The National Fisheries Policy (2015), The Standards Act No. 2 of 2009. Wildlife Conservation Act, 2009, Marine Parks and Reserve Act, 1994, Territorial Sea and Exclusive Economic Zone Act, 1989, Deep Sea Fishing Authority(Amendment) Act, 2007, Deep Sea Fishing Authority Regulations, 2009, Public Private Partnership Act and Regulations, 2020; . Fisheries (Prohibition of Use of Specified Vessels or Tools) Regulations, 1994, Ports Act, 2004 (No. 17 of 2004), Merchant Shipping Act, 2003, Surface and Marine Transport Regulatory Authority Act, 2001, Merchant Shipping (Licensing of Unregistered Vessels) Regulations, 1990, Public Private Partnership Act, 2010 Key Institutions Ministry of Livestock and Fisheries, Deep Sea Fishing Authority, Tanzania Shipping Agencies Corporation, Ministry of Finance, Bagamoyo District Council, Pangani District Council, Mafia District Council and Kilwa District Council	Zanzibar Fisheries Act (2010), Zanzibar Fisheries Policy (2014), Zanzibar Maritime Act, 2009, Territorial Sea and Exclusive Economic Zone Act, 1989, Deep Sea Fishing Authority Act, 2007 Key Institutions Department of Fisheries, Ministry of Agriculture, Natural Resource, Livestock and Fisheries Management, Zanzibar Maritime Authority
Nutrition	The National Health Policy 2017, Food and Nutrition Policy, 1992, The Tanzania Food and Nutrition Act, 1973, Tanzania Food, Drugs and Cosmetics Act, 2003, Food Security Act, 1991 Key Institutions Ministry of Health, Community Development, Gender, Elderly and Children Tanzania Food and Nutrition Centre	Zanzibar Food Security and Nutrition Policy, 2008, Zanzibar Food Security and Nutrition Act, 2011 Zanzibar National Health Policy (2010) Key Institutions Ministry of Health, Department of Food Security and Nutrition (FSND) of the Ministry of Agriculture, Natural Resources, Livestock and Fisheries (MANRLF)
Gender	Employment and Labour Relations Act, 2004, The National Employment Policy (1997), Policy on Women in Development in Tanzania of 1992; Women and Gender Development Policy of 2000; Community Development Policy of 1996; National Economic Empowerment Policy of 2004; National Land Policy of 1995 Key Institutions Ministry of Health, Community Development, Gender, Elderly and Children, Ministry of Labour, Employment, and Youth Development	National Plan of Action to End Violence Against Women and Children in Zanzibar 2017–2022 Key Institutions Ministry of Labour, Empowerment, Elders, Women and Children
Youth	Youth Development Policy,2007 Key Institutions Ministry of Labour, Employment and Youth Development, Ministry of Information, Culture, Youth and Sports	Zanzibar Youth Development Policy,2005, Youth Employment Action Plan, 2007, Zanzibar Vocational Education and Training Policy, 2005, Zanzibar Employment Policy (2007) Key Institutions Ministry of Youth, Arts, Culture and Sports

IFAD'S SAFEGUARD POLICIES

IFAD has developed safeguard policies to support the sustainable implementation of its activities and interventions in achieving its mandate to eradicate rural poverty and food insecurity. These include policies and strategies on: Improving Access to Land and Tenure Security; Disclosure of Documents; Environment and Natural Resources; Gender Equality and Women's Empowerment; Preventing and Responding to Sexual Harassment, Sexual Exploitation and Abuse; Targeting; Social, Environment and Climate Assessment Procedures (SECAP) and Strategy and Action Plan on Environment and Climate Change. SECAP provides 14 Guidance Statements, namely: **Biodiversity**; **Agrochemicals**; Energy; Fisheries and Aquaculture; Forest Resources; Rangeland-based Livestock Production; Water; Dams,

their Safety and SECAP; **Physical Cultural Resources**; Rural Roads; **Development of Value Chains, Microenterprises and Small Enterprises**; Rural Finance; Physical and Economic Resettlement; and **Community Health**. The most relevant Guidance Statements are emboldened. The key differences between GoT and IFAD policies and requirements are the GoT framework does not specifically provide climate risk categorisation or FPIC; and there are differences in regard to entitlement and procedures for compensation and resettlement and livelihood restoration where physical and economic displacement may occur.

LESSONS LEARNED

The AFDP design builds on lessons learned from IFAD-supported as well as other projects in Tanzania and elsewhere in Africa. These include:

- The need to adopt an inclusive agricultural value chain approach that, beyond productivity and production, invests in linking smallholder producers to more profitable markets, and building their capacities to graduate from artisanal fishing and subsistence farming to semi-subsistence/semi-commercial status, practicing farming as a business.
- The combination of capacity building activities for fishers, traders, processors in capture, handling, processing, and conservation and the improved access to fishing inputs (e.g. ice, electricity, better access roads, etc.) contributes to improved fisheries productivity (more catch and reduced waste) and increased incomes.
- Agriculture value chains are underdeveloped and fragmented, and therefore there is a need to bridge the gap between agricultural production and marketing, with a focus on business innovations benefiting women and youth along the value chain.
- With regard to deep sea fisheries: temporary closures are an effective management tool for sustainable fisheries (ii) fishers are generally happy with closures since they get more during opening season; (iii) better community governance and coordination with buyers is needed during reef opening period in order to avoid spoilage of the high harvest and reduce concentrated fishing pressure at certain sites; and (iv) by-catch continues to be an issue that would require management.

STAKEHOLDER CONSULTATIONS

At the national level, the team met GoT representatives in Dodoma and Dar es Salaam from the Prime Minister's Office (PMO), Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries (MLF); Ministry of Finance and Planning Tanzania Mainland (MOFP-TZ), National Environment Management Council (NEMC), Tanzania Meteorological Agency (TMA), National Bureau of Statistics (NBS), Department of Water Resources in the Ministry of Water (MOW). In Zanzibar, the team met with representatives from the Ministry of Finance and Planning Zanzibar (MOFP-ZNZ), and Ministry of Agriculture, Natural Resources, Livestock and Fisheries of Zanzibar (MANRLF) and Deep Sea Fishing Authority (DSFA). Other agencies consulted included Tanzania Agricultural Research Institute (TARI), Agricultural Seed Agency (ASA), Tanzania Official Seed Certification Institute (TOSCI), Aquaculture Development Centre (ADC), Tanzania Fisheries Research Institute (TAFIRI), Tanzania Fisheries Cooperative (TAFICO), Zanzibar Fisheries Cooperative (ZAFICO). Discussions were also held with The Nature Conservancy (TNC), the International Union for the Conservation of Nature and Natural Resources, the Indian Ocean Tuna Commission (IOTC), among others.

In addition, in the field the Team met with with crop farmers, agrodealers, sunflower processors, aquafarmers, fishers, and owners of private fishing boats and seaweed farmers.

POTENTIAL ENVIRONMENTAL, SOCIAL AND CLIMATE-RELATED IMPACTS

Beneficial Impacts

AFDP will provide numerous environmental, socio-economic and climate resilience benefits for different stakeholders and target groups. These are summarized below:

Environmental and Natural Resources Benefits:

- Management of natural resources will address destructive fishing practices and illegal mangrove cutting;
- Support to the implementation of the Tuna Fisheries Management Plan will contribute to sustainable management of marine resources;
- Investments in stock assessments;
- Selective fishing gears will reduce catching non-targeted species;
- Participatory management of natural resources to address destructive fishing practices and illegal mangrove cutting;
- Capacity building for community-based Beach Management Units/Fisheries Cooperatives in sustainable fishing practices and monitoring and reporting IUU fishing activities;
- Capacity building to protect coastal and marine resources will contribute to improving fish stocks;
- Increased use of environmentally friendly adaptive techniques and technologies in fishing, processing and storage;
- Participatory management of natural resources will address destructive fishing practices and illegal mangrove cutting;
- Access to and adoption of environmentally friendly technologies in improved crop seed production

Socio-Economic Benefits:

- Opportunities for income diversification in fish and seed value chains;
- Improved nutrition from bio-fortified maize and beans/pulses, sunflower, seaweed and fish species of high nutritive value;
- Improved food security from increased availability of fish protein (from targeted catch as well as bycatch);
- Support in seed distribution and marketing will improve productivity;
- Access to high quality inputs (seeds, fertilizers, fingerlings) and support to processing and improving farmers' access to markets will cushion impacts in the post COVID-19 situation;
- Support in fingerling distribution, tissue culture and marketing will improve productivity;
- Access markets will cushion impacts in the post COVID-19 situation;
- Reduced workloads due to increased resilient crop yields;
- 90% seaweed producers and processors will be women;
- Enhanced income leading to greater decision-making power for women within the household;
- Economic empowerment to control income and improved decision making;
- Access to better education and health care for children as a result of enhanced income of parents;
- Improved opportunities and skills for small enterprises in processing, storage and value addition of crops and fish products;
- Enhanced capacity as out-growers for seed companies;
- Enhanced capacity as aquafarmers and aquaculture service providers;
- Enhanced capacity as seaweed farmers;
- Enhanced access to financial services;

- Increased participation in decision-making;
- Increased linkage with smallscale seed producers and fishers in different value chains.

Climate Change Resilience:

- Reduced expenditure for disaster management and rescue missions hence more resources directed towards other social services;
- Increased the resilience and adaptive capacity of local people to the threats of climate change through a diversification of income streams;
- Availability of locally adapted seeds that are more resilient to climate change, pests and diseases;
- Solar-powered pumps for irrigating seed fields, and dryers for seaweed will eliminate need for fossil fuel driven pumps;
- Access to locally adapted seeds that are more resilient to climate change, pests and diseases;
- Solar-powered dryers will eliminate need for fossil fuel driven drying technologies;
- Availability of adequate water for ponds throughout the year as there will be shorter dry spells.
- Seaweed farming has a negative carbon footprint.

Adverse Impacts

The Programme will have a number of environmental, social and climate-related risks and negative impacts that will have to be mitigated and managed. These are summarised in the table below.

Table E-2: Environmental, Social and Climate-Related Risks and Impacts

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Responsible Institution in Implementation Phase
Environmental Risks and Impacts		
Abstraction of water for irrigation and aquaculture resulting in depletion of aquifers, particularly in the dry season leading to threats to aquatic ecosystems.	• Adhere to permitted abstraction volume as stipulated in water user permits.	ASA, TARI, ADC Water Basin Offices
Excavation activities and/or clearing of vegetation during construction of irrigation schemes, buildings/workshops, storage and processing facilities, leading to: - Soil erosion, - Dust emissions, - Loss in biodiversity; - Resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources and/or sea	• Minimise/prevent soil erosion by controlling earthworks, installing and maintaining drainage structures and erosion control measure; use zero-till/reduce till methods of land preparation. • Mitigation through restoration of the sites after works in accordance with contractors environmental and social management plans (CEMPS) • Any existing riparian vegetation should be maintained (not cleared) • Use zero-till/reduced till methods for land preparation • If mechanized clearing, where water is available, keep dust down by watering exposed/ worked surfaces • If possible, schedule clearing activities such that they avoid the height of the dry seasons. • Careful and continuous supervision of clearing activities so that only areas required for plot/fields are cleared. • Monitor water quality	ASA, TARI, ADC
Use of agrochemicals, leading to pollution due to leaching, seepage or transmission of agrochemicals through the soil into water sources; threats to aquatic ecology, including bio-magnification of toxins in tissues of aquatic fauna, and/or species die off; loss of biodiversity, ecological imbalances, caused by poisoning of non-target species, particularly bees and other	• Prepare and implement an Agrochemical Management System, and an Integrated Pest Management Plan • Minimise use of agrochemicals through adopting conservation agriculture techniques, explore organic/natural fertilizers, agrochemicals • Manual removal of weeds • Careful supervision of application of agrochemicals	ASA, TARI, PHS, PPD

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Responsible Institution in Implementation Phase
beneficial insects; resistance to pesticides and pest resurgence.	• Use agrochemicals registered and approved by MoA/MANRLF, WHO and FAO • Train farmers/aquafarmers in proper use, handling, storage, and disposal of agrochemicals. • Ensure agrochemical containers are disposed of as hazardous waste according to waste management regulations • Keep records of agrochemicals used, application amounts. • Monitor water quality in soils and water sources	
Over-watering of fields leading to water logging and salinization	• Control water supplied to fields • Fields should have slight gradients so as to allow drainage of excess water • Maintain drainage canals and other drainage structures	ASA, TARI
Discharge of contaminated water from aquaculture ponds entering surface water bodies or contaminating soil.	• Monitor water quality discharged from ponds • Treat effluent to conform with Tanzania Bureau of Standards TZS 860: 2005 General Tolerance Limits for Municipal and Industrial Wastewaters prior to discharge into surface waters	ADC, Municipal Councils, Water Basin Offices in respective areas
Disposal of laboratory reagents, affecting functionality of septic tanks and sewage systems, and leading to chemical pollution of water courses and soil.	• Wastewater quality testing • All effluent from laboratories to be treated to conform with Tanzania Bureau of Standards TZS 860: 2005 General Tolerance Limits for Municipal and Industrial Wastewaters prior to discharge into septic tanks, sewage systems or surface waters	TOSCI, Municipal Councils, Water Basin Offices in respective areas
Oil pollution from spills or leaks fuel, oils and lubricants from farm machinery, oily bilge water from vessels	• Where fuel is stored in bulk, the fuel tank should be contained in a bund of 110% tank capacity • Where fuel drums are used these should be stored on sump pallets. • Establish procedures for fuel delivery; decanting/draining; use, storage; spill response; disposal of waste oil; handling of oil products • Establish procedures for treatment of oily bilge water: use of oil/water separators and storage in waste oil collection tanks until vessel can dispose of it safely onshore.	ASA, TARI, ADC TAFICO, ZAFICO
Excessive noise from working machinery, drilling boreholes, etc.	• Adhere to guidelines as prescribed in the First Schedule of the Environmental Management (Standards for the Control of Noise and Vibrations Pollution), 2014 • Install noise reduction technologies in machinery, generators, etc.	ASA, TARI, ADC
Generation of waste such as food waste, packaging, scrap metal leading to health risks from proliferation of vermin, obstruction of access	• Dispose of solid waste as per best practice guidelines: recycle, reuse, recover and reduce waste • Sensitise construction workers, farmers, fishers, processors, on waste management practices	ASA, TARI, ADC
Risk of fire destroying structures and surrounding vegetation, and causing air pollution, and solid waste pollution from fire debris	• Prepare emergency preparedness and response plan • Training in emergency response as per plan	ASA, TARI, ADC TAFICO, ZAFICO
Overfishing from DSF vessels and due to use of FADs	• Strengthen data reporting and monitoring • Develop and implement deep sea tuna fishing management strategies • Control and monitor use of FADs • Develop FAD management strategies • Limit use of FADs	DSFA TAFICO, ZAFICO MLF, MANRLF
Juvenile catch and bycatch of non-targeted species	• Strengthen data reporting and monitoring • Develop and implement deep sea tuna fishing management strategies	DSFA TAFICO, ZAFICO

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Responsible Institution in Implementation Phase
	• Control and monitor use of FADs • Develop FAD management strategies • Limit use of FADs • Use non-entangling and biodegradable FADs	MLF, MANRLF
Risk of escape of seaweed culture to open sea	• Prepare biologically coupled hydrodynamic models to support the assessment of risk, understand carrying capacity of water bodies and select suitable sites for seaweed cultivation • Seaweed farm management practices to enhance biosecurity measures.	MANRLF
Social/Socio-Economic Risks and Impacts		
Irrigation, aquaculture resulting in reduced availability of water for other ongoing and planned developments, causing conflict between communities and project interventions Competition for water sources with community sources	• Ensure community water sources are not compromised • Establish grievance redress mechanism to deal with conflicts	ASA, TARI, ADC Water Basin Offices
Poor application and handling of agrochemicals: touching, inhaling or ingesting toxic chemicals leading to dermatological or gastric ailments, or poisoning.	• Develop agrochemical management system and IPMP describing handling, storage, use and disposal of all agrochemicals used on the schemes. • Train farmers in the handling, safe storage, application and disposal of all agrochemicals.	ASA, TARI, ADC PHS, PPD
Poor treatment application methods and improper storage leading to proliferation of aflatoxins and resulting health effects on community	• Remove sources of contamination, promoting better agricultural and storage techniques (control moisture, temperature, and aeration) • Ensure adequate resources are available for testing and early diagnosis, and enforcing strict food safety standards, • Sensitisation of farmers and consumers about risks of aflatoxins • Create general awareness about personal protection • Chemical decontamination or use of enterosorbents for contaminated grains	ASA, TARI
Encroachment by deep sea and artisanal fishers into marine protected areas or sensitive coastal areas affecting marine biodiversity	.. Establish buffer zones between marine protected areas and EEZ	DSFA TAFICO, ZAFICO
Excessive noise levels from fishing vessel engines, ice making, farm machinery, and value chain processing activities causing workers' and fishers' hearing impairments	• Adhere to guidelines as prescribed in the First Schedule of the Environmental Management (Standards for the Control of Noise and Vibrations Pollution), 2014 • Provide PPE to personnel exposed to excessive noise levels on site such as ear muffs. • Install noise reduction technologies in machinery, generators, etc.	TAFICO, ZAFICO ASA, TARI
Emissions from burning e-waste are toxic to humans and animals.	• Avoid burning e-waste • Set up e-waste management procedures. • Agree with suppliers that e-waste from the equipment supplied by them to be taken back by them for recycling/disposal in line with Environmental Management (Hazardous Waste Control and Management) Regulations, 2019 and international best practice. • Establish grievance redress mechanism ..	TOSCI NEMC
Accidents and injuries to workers due to movement of materials into construction sites, as well as construction activities, for processing plants, treatment and storage facilities, workshops, laboratories, etc. Accidents and incidents, electrocution, from handling machinery and working with electrical	• Provide adequate and appropriate PPE such as safety boots, helmets, gloves, overalls and this should be in keeping with the task and exposure a worker is subjected to • Comply with OSHA requirements and best practice • Provide training to all relevant personnel in necessary OHS requirements to ensure their safety	OSHA

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Responsible Institution in Implementation Phase
systems, during operation/implementation in buildings and on vessels	• First Aid Kit must be kept on the site and modestly stocked with necessities for any emergencies. • Prepare an Emergency Preparedness and Response and Evacuation Plan • Train all personnel in emergency response	
Conflicts in use of coastline for seaweed vs tourism and other activities using same resources	• Consultations between seaweed farmers, tourism operators, government offices and other key stakeholders to agree on how to use/share beach area. • Establish grievance redress mechanism to deal with conflicts • Develop Marine Spatial Plan designating specific zones for specific activities along coastline.	PCU Department of Fisheries of MANRLF
Women may be marginalised from participating in seaweed cultivation if access to training is limited and if technologies make it difficult for women (eg if seaweed is to be grown in deeper water)	• Continuous consultations and dialogue between project implementors and potential women participants/ beneficiaries to establish how to overcome some of these difficulties.	PCU Department of Fisheries of MANRLF
Gender based violence (GBV) i.e. transactional sex (fish for sex) and Intimate Partner Violence, child labour	• Create awareness on prevention, handling and referral for all forms of GBV and child labour – integrated in the project activities	PCU, all Programme entities
Retrogressive social norms prevent women and youth from participating and benefitting from project activities	• Use of GALS methodology and or other gender participatory methodologies to empower women and make women's roles, needs and aspirations visible; and sensitizing smallholder farmers, women, men and youth to increase their participation • Increasing women's access to knowledge, skills, inputs and finance through training, matching grants, exposure visits and GALS fairs • Increasing women and youth's visibility as actors in the value chains through representation quotas	PCU, all Programme entities
Inequitable labour and working conditions.	• Ensure labour and working conditions are in line with national labour laws and ILO core conventions: equal pay, non-discrimination	PCU Ministry of Labour and Employment (TZ), Ministry of Labour, Empowerment, Elderly, Youth, Women and Children (ZNZ)
Inadequate consultation of various stakeholders, particularly with vulnerable and disadvantaged members of the communities may result in reduced uptake of linkages, promoted varieties, attendance at field schools, enhanced marketing, value chain interventions	• Carry out continuous, extensive and inclusive consultations with stakeholders, particularly vulnerable and disadvantaged groups, during entire project period • Set up and disseminate Grievance Redress Mechanism which should be accessible to all stakeholders	PCU, all Programme entities
Risk of fire on spreading to neighbouring premises, and causing injury/fatalities to workforce and neighbours. Risk of fire from onboard vessel activities causing injury/fatalities to crew and fishers	• Prepare emergency preparedness and response plan • Train all workers, crews and fishers in fire response	ASA, TARI, ADC TAFICO, ZAFICO
Failure of reservoir structure causing hazard risk to workers on site and surrounding communities	• Prepare emergency preparedness and response plan • Train all workers, and community leaders/representatives in hazard response procedures.	ASA, TARI, ADC
The COVID-19 pandemic may affect output and earnings as a result of restrictions on imports of tuna and processed seaweed imposed by target countries, or disruptions in transportation modes resulting in spoilt goods.	• Ensure guaranteed markets	MANRLF TAFICO, ZAFICO
Climate Risks and Impacts		

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Responsible Institution in Implementation Phase
Pests and disease outbreaks, including locusts, fall army worm, fish diseases	• Establish early warning systems • FOs to be trained in accessing climate early warning systems • Encourage FOs to develop alternative livelihood means through safety nets • Develop and implement IPMP	ASA, TARI, ADC
Excessive rain, wind or floods may damage project buildings and road and water infrastructure.	• Install and maintain drainage structures to regulate stormwater and runoff/run on	ASA, TARI, ADC
Excessive rain, wind or floods may cause severe soil erosion	• Install and maintain drainage structures to regulate stormwater and runoff/run on • Use zero-till/reduced till methods for land preparation	ASA, TARI, ADC
Extreme rainfall affecting ITC, cellular signals for early warning systems	• Back up data	PCU, TOSCI
Sea water rise may affect project structures if located to close to the sea, and make seaweed farming difficult	• Careful siting and maintenance of structures based on predicted sea level rise	PCU Fisheries Department of MANRLF
FADs cut loose due to cyclones or severe wave action leading to ghost fishing	• Use of smart FADs include sonar and GPS capabilities so that the operator can remotely contact it via satellite to determine the location if cut loose. • Use of biodegradable materials for FADs • Monitor break away FADs	Fisheries department at Bagamoyo,Kilwa, Mafia and Pangani District Councils
Tropical cyclones and inclement seas leading to vessels getting lost, damage to vessels, capsizing.	• Prepare emergency preparedness, response and evacuation plan • Train all crew members and fishers in emergency procedures	TAFICO, ZAFICO DSFA
Droughts / prolonged dry periods leading to water unavailability /scarcity	• Establish early warning systems • FOs to be trained in accessing climate early warning systems • Encourage FOs to develop alternative livelihood means through safety nets • Establish alternative water supplies, eg. rainwater harvesting, storage facilities for times of spate	ASA, TARI, ADC TMA
E-waste releases of GHG	• Avoid burning e-waste • Set up e-waste management procedures. • Agree with suppliers that e-waste from the equipment supplied by them to be taken back by them for recycling/disposal in line with Environmental Management (Hazardous Waste Control and Management) Regulations, 2019 and international best practice.	TOSCI NEMC
Disillusion, distrust as a result of delayed implementation	• Continuous communication with stakeholders at all levels.	PCU
Poor safeguards measures in procurement	• Ensure procurement of safeguards related studies is done in accordance to IFAD's procurement guidelines	PCU, IFAD

CLIMATE RISK ASSESSMENT

AFDP has been classified as moderately sensitive to climate risks, and therefore falls into the medium risk category. A basic climate risk analysis (CRA) was carried out to determine the exposure of the Programme to climate-related risks based on available information about historic climate hazard occurrences, climate change trends and projections.

Climate models project increases in temperature with high variation from zone to zone. Temperatures in the western parts of the country are projected to rise up to 3.4^0C by 2100. Rainfall projections predict increased rainfall in most parts of the country, especially over coastal regions, parts of north-eastern highlands, northern regions, western and southern parts of the Lake Victoria basin. The south-western highlands, eastern parts of Lake Nyasa, and Western regions are projected to experience decreased rainfall.

With regard to crop seed production, maize production is sensitive to daytime high temperatures above 30 °C. Heat stress during flowering and grain filling stages, and reduced moisture availability results in decreased grain count and weight, resulting in low crop yield and quality. Maize seed production in semi-arid areas of central zones of Tanzania is therefore likely to face a decrease in yield of 8-13% by 2050 due to increased heat stress, drying, soil erosion and land degradation. In semi-arid areas, water and heat stress are projected to decrease the length of the growing season while spatially shrinking the suitable areas for agricultural production. Similarly, bean yields are expected to decrease by 5-9% by 2050. Climate change is also likely to reduce yields in sunflower seed production, which is sensitive to dry spells and droughts

Increasing seasonal and annual variability in precipitation and resulting flood and drought extremes are likely to be the major threats to aquaculture development. Reduced annual rainfall may lead to potential conflict with other agricultural, industrial and domestic users in water-scarce areas. So small-scale farmers may suffer from shortened growing seasons and reduced harvests of inferior fish. The decreasing water levels stimulate early maturation and spawning of some important farmed species, resulting in over-crowding, loss of economic returns and a narrower choice of species for aquaculture.

The main impacts of climate change on Tanzanian fisheries are the destruction or degradation of fish spawning and nursery grounds, and feeding areas. Rising sea surface temperature and ocean acidification are considered as major threats to coral reefs. However, coral reefs may have the capacity to adapt to changing temperatures more quickly than expected by changing their species composition rather than disappearing. This will also affect associated fish fauna that will change towards more generalist species.

As for seaweed farming, *E. spinosum* and *E. cottonii* production have been declining substantially over the last decade, due to increasing sea surface temperatures and longer hot seasons. Farmers have experienced serious problems of die-off and ice-ice diseases resulting into decreased production.

ENVIRONMENTAL, SOCIAL AND CLIMATE CHANGE MANAGEMENT PROCEDURES

Implementation and Coordination Arrangements

As mentioned above, while the overall coordination role sits with the PMO, the MoA, MLF and MANRLF will be responsible for Programme implementation through PCU which will be supported by the Technical Advisory Committee (PTAC), Technical Working Groups (TWGs), and District Facilitation

Teams (DFTs). The PCU will include an Environmental, Social and Climate (ESC) Specialist who will report to the Programme Coordinator. The ESC Specialist will work closely with the DFTs, particularly the District Environment Management Officers (DEMO), the District Agriculture Officers (DAO), the District Fisheries Officers (DFO), and the District Community Development Officers (DCDO), as well as the Regional Environmental Officer.

The implementing agencies for the various Programme activities and interventions are TARI, ASA, ADC, TOSCI, TAFICO and ZAFICO.

Specific responsibilities in relation to environmental and social assessment and monitoring procedures and safeguards requirements are described in the sections.

Screening

AFDP has been categorised as Category A. While most of the proposed interventions will have some significant impacts that can be readily mitigated or remedied and therefore fall into Category B, some activities will have significant environmental impacts which are not easily remedied rendering them Category A. Category B interventions are: crop seed development activities (involving small scale irrigation <100ha, seed testing and certification laboratories and a training centre), mariculture involving a training centre to promote technologies to improve seaweed farming, and aquaculture ponds. However, the deep sea fisheries and related processing activities may have significant adverse environmental and/or social implications that warrant further investigation. The impacts of tuna fisheries are sensitive not least because a number of tuna and tuna-like species are considered to be susceptible to overfishing or are currently overfished, and moreover any impact on their stocks will extend over a large area, beyond territorial waters. This is compounded further by the limited data available on fish stocks and sustainable yield. Thus, the deep sea fisheries and related interventions are considered to be Category A.

The table below shows categorization for activities and interventions under each of the AFDP components.

Table E-3: Screening and Categorisation of AFDP Activities

Components and Interventions	Activity categorisation	
	GoT/RGZ	SECAP
Component 1. Enhanced productivity of crop seeds and fisheries		
Subcomponent 1.1: Crop seed systems development: National seed demand and supply coordination, Innovation development and Early Generation Seed production; Basic seed multiplication; Seed certification		
Irrigated fields as seed farms <100ha in size including: laboratory, seed dryer, processing plants, workshops for farm equipment maintenance, water reservoirs, and seed treatment and storage facilities for produced seed, and boreholes	B1	B
Irrigation schemes for EGS approx. 25ha in size including: laboratory, workshops for farm equipment maintenance, water reservoirs, seed treatment and storage facilities, and boreholes.	B2	B
Seed Testing Laboratories (infrastructure & equipment) Seed certification (field and lab control, electronic systems for seed authentication)	B1	B
Subcomponent 1.2: Fisheries and aquaculture development: Development of sustainable marine fisheries production system; Increasing aquaculture productivity and output; Increasing mariculture productivity and output		
Mainland: Fishing vessels x4 (25m) for deep sea fishing, fish processing and storage >50T /day	A	A
Zanzibar: Fishing vessels x4 (18m) for deep sea fishing, fish processing and storage <50T /day	A	A
Support to artisanal fishing: provision of fishing gear to artisanal fishers (90 FADs)	B2	B

Components and Interventions	Activity categorisation	
	GoT/RGZ	SECAP
Aquaculture demonstration centres at 3 ADC sites, incl borehole and one water supply system at Kingolwira (<50ha)	B1	B
Additional Borehole at Boma Road for Kingolwira ADC	B1	B
Tissue culture nursery in Unguja, incl. seaweed technologies and demonstration farm	n/a	B
Mariculture training centres x 2 (Unguja and Pemba) <360 students	n/a	B
Component 2. Improved market access, value addition and private sector development		
Subcomponent 2.1: Quality seed use and business development: Zonal multi-stakeholder innovation platforms. Promoting offer and access to improved seeds. Promoting awareness and demand for improved seeds		
Distribution networks, linkages between agrodealers and farmers to facilitate access to improved seeds	n/a	C
Promotion of use of improved varieties and CSA practices (targeted support to extension)	n/a	C
Support FO for services for member access to inputs and markets	n/a	C
ICT platforms for dissemination of information on seed availability (improved varieties and quantities)	-	B
Sub-component 2.2: Fish market development and value addition: Reducing post-harvest losses. Private-Public-Producer partnerships (4Ps) joint venture for deep sea fishing. Increasing value/income from aquaculture production		
Ice plants for smallscale fishers x 8 (cap <50T/day)	B1	B
Cold chain: Cold storage facilities (40 t/facility) x2 and Refrigerated trucks x5	B1	B
Construction of fish market at Kipumbwi, incl. storage and ice plant	B1	B
Dagaa solar powered drying racks x80	n/a	B
Solar drying tents for seaweed and machines for grinding dried seaweed x5	n/a	B
Fish feed mills	n/a	B
Component 3. Programme Management and Coordination		
Subcomponent 3.1: Policy engagement and institutional strengthening		
Institutional reforms in public institutions	n/a	C
Development of aquaparks (aquaculture cluster growth model)	n/a	C
Subcomponent 3.2: Programme Management and Coordination: Programme management, coordination, monitoring and evaluation (M&E), communication and knowledge management	n/a	C
Subcomponent 3.3: Emergency recovery and resilience post COVID-19	n/a	C

Where categorisation by national legislation and SECAP categorisation differs, the more stringent categorisation is applied.

Environmental, Social and Climate Safeguards Documentation

The main types of safeguards documentation required to be prepared for AFDP are:

i. Environmental and social impact assessment studies (ESIAs) and Environmental and Social Impact Statements (EISs) for Category A projects;
ii. Project Briefs (PBs) - equivalent to SECAP's Category B Environmental and Social Management Plans - for Category B1 and B2 projects. For GoT Category B1 projects, a PB is prepared and submitted to NEMC for review, and NEMC then determines whether a full ESIA is required or whether the PB will suffice;
iii. Standard Operating Procedures (SOPs) and activity-specific management plans;
iv. Climate risk analysis (CRA) as described above;
v. Integrated Pest Management Plan (IPMP) where agrochemicals are to be used;
vi. Stakeholder Engagement Plan (SEP) to guide stakeholder consultations for the duration of the various interventions and subprojects.

AFDP will not cause any physical or economic displacement, since all activities will take place on existing government-owned land, or within territorial waters or in the EEZ. There is therefore no encroachment onto, or acquisition of, ancestral lands belong to indigenous groups, nor will any of the Programme's interventions and activities affect indigenous groups. Furthermore, the Programme will not trigger FPIC as defined by IFAD's How to do Note on Free Prior Informed Consent, since it involves agricultural and fisheries development subprojects in rural areas with no indigenous groups or minorities, and which will not affect land rights. Hence the need for a Resettlement Action Framework or Resettlement Action Plans, Indigenous Peoples Plans or FPIC Implementation Plan is precluded.

Disclosure of ESIAs and Project Briefs

In developing ESIAs and Project Briefs, consultations must be held with all levels: at community/ village, district and national levels. During these consultations, the processes for disclosure of the documents should be communicated. IFAD's SECAP procedures also require that sufficient consultations have been carried out with key stakeholders (ie. the communities). While the Project Briefs and ESIAs are being reviewed by NEMC, the ESIAs or Project Briefs and AFDP's Integrated Pest Management Plan (IPMP) will be disclosed nationally, at a location accessible to the general public, and in a form and language that the communities are able to understand, so that they may comment on any aspects/issues contained in the reports prior to their approval. PMO, MoA, MLF and MANRF and IFAD will be responsible for disclosure, and the disclosure period may take up to 60 days.

Review and Approval of ESIAs, Project Briefs and IPMP

ESIAs and Project Briefs will be reviewed by the PCU ESC Specialist and then submitted for review and approval/clearance to NEMC. The AFDP IPMP will be reviewed by IFAD and approved by the Plant Health Services Unit (PHS) of the MoA, Fisheries Development Division in the MLF, and the Plant Protection Division (PPD) of the MANRLF.

Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)

AFDP component interventions, depending on their scope, can exacerbate existing risks or can create new ones. Project-related risk factors may include: women perceived as taking jobs away from men; unequitable sharing of income between men and women after sale of produce; and failure by communities to relate with construction labourers who sometimes have different culture and language. All these can exacerbate already existing inequities between women, men, and youth.

Grievance Redress Mechanism

The goal of AFDP's Grievance Redress Mechanism (GRM) is to promote a mutually constructive relationship and enhance the achievement of Programme's development objectives. The GRM is to ensure that complaints are directed and expeditiously addressed by the relevant agencies which are to enhance responsiveness and accountability. AFDP will utilize existing formal or informal grievance mechanisms to resolve disputes which may arise. Informal mechanisms include existing committees and or individuals in farmers groups responsible for conflict management to handle disputes. The formal grievance redress mechanisms exist at ward levels where the members of ward tribunals are involved in dispute resolution. For criminal cases, the police are required to intervene. Should disputes not be resolved at these levels, then the matter is taken to the district magistrate's, resident magistrate and finally high courts. Conflicts related to labour relations at work place between employee and employer are resolved by Commission of Arbitration and mediation. In addition to AFDP's GRM, communities and individuals who believe that they are adversely affected by AFDP activities may submit complaints to the IFAD Grievance Redress Service (GRS).

Monitoring

Performance monitoring requires that: the various safeguards instruments (ESIAs, Project Briefs, ESMPs, and IPMP) have been prepared to the required standard, within the required timelines; the safeguards instruments have been reviewed and approved by the responsible entities; environmental, social and climate mitigation measures, have been/are being implemented and that mitigation measures are effective; the implementation of the ESMPs, IPMP and GRMe grievance redress mechanism(s); the community is participating in all stages of the environmental and social management and monitoring processes; PCU and relevant officers in the implementing agencies have been trained in accordance with the capacity building proposals; reports are prepared and delivered as required. Performance monitoring will be done primarily by the ESC Specialist.

Results monitoring involves monitoring compliance and effectiveness of the safeguards instruments, and also assesses the overall environmental, socio-economic and climate-related impacts of the Project's interventions in relation to its development objectives. Results monitoring will be done on an annual basis by the ESC Specialist, in collaboration with the DEMOs, DCDOs and Regional Environmental Experts.

Quarterly and Annual Reviews

Quarterly and annual reviews will be undertaken by the ESC Specialist. These reviews are necessary to: ensure that subprojects and interventions are complying with the processes established in the ESMF; ensure that subprojects are compliant with the conditions and requirements stipulated in ESIAs, ESMPs and IPMP; identify challenges and opportunities in order to learn lessons and thereby improve Programme performance; and be able to determine the cumulative impacts of the Programme to establish attainment of its Development Objectives.

Reporting

Each implementing agency will submit monthly reports on environmental, social and climate-related issues to the PCU on their respective interventions and activities. The PCU Programme Coordinator will submit quarterly and annual environmental, social and climate performance reports to the PSC and IFAD.

Auditing

The purpose of auditing is to establish the level of compliance with national policy objectives and regulatory requirements and whether NEMC's conditions of approval attached to the EISs and Project Briefs are being implemented satisfactorily. The PCU will be responsible for ensuring that annual monitoring audits (for environmental and social compliance) are carried out once every year. The audits will be carried out by independent NEMC-registered expert. Audit reports will be sent to the PSC and IFAD, as well as to NEMC and the respective implementing agencies. NEMC will review the audits and provide feedback to the PSC for passing onto the respective implementors.

Summary of ESC Procedures and Responsibilities

The table below summarises the environmental, social and climate change management procedures and responsibilities described in this ESMF.

Table E-4: Summary of ESMF Processes and Responsibilities

ESMF Procedures	Activity	Responsibility
ESIA/Project Brief	Preparation of EIS or Project Brief, both containing ESMPs	NEMC-registered Expert
	Disclosure of EIS or Project Brief	MoA, MLF, MANRLF and IFAD
	Review of EIS or Project Brief	ESC Specialist
	Review and approval of EIS or Project Brief	NEMC
	Implementation of ESMP	Implementing agencies, contractors
	Supervision and monitoring of the ESMP developed for EIS or Project Brief	ESC Specialist and DEMOs
Other Plans/SOPs	Preparation of management plans / SOPs	Consultant or Technical Assistants, supervised by ESC Specialist
	Implementation of SOPs	ESC Specialist
Climate Risk Analysis	Climate risk monitoring	ESC Specialist, VPO's Office
IPMP	Preparation of IPMP	ESC Specialist
	Review and approval of IPMP	IFAD, PHS (MoA-TZ), and PPD (MANRF-ZNZ)
	Supervision and monitoring of implementation of IPMP	ESC Specialist, District Agricultural Officers, District Fisheries Officers
Grievance Redress Mechanism	Grievance receipt, verification, investigation, resolution, communication with complainant and referral to higher levels if necessary	GO/GRC Ward tribunals
	Monitoring of effectiveness of GRM	ESC Specialist
Performance monitoring	Safeguards instruments	ESC Specialist
	Intervention level activities	Implementing agencies
Results Monitoring	Project level environmental and social indicators	ESC Specialist, DEMOs, DCDOs, Regional Environmental Officer
Reviews	Submission of quarterly review reports to PSC and IFAD	ESC Specialist
	Submission of annual review reports to PSC and IFAD	ESC Specialist, PCU ME&KM Officer
Reporting	Monthly environmental, social and climate resilience reports to PCU	Implementing agencies
	Quarterly and annual environmental, social and climate resilience performance reports to the PSC and IFAD	PCU Programme Coordinator
Annual Monitoring Audits	Audits of subprojects once every year	Carried out by independent Expert registered with NEMC. Overall responsibility ESC Specialist. Reviewed/approved by NEMC

CAPACITY BUILDING

Training of Programme implementers at various levels will be integrated into planned training activities during the course of implementation. Proposed trainings, target audience and training methods are summarized in the table below.

Table E-5: Proposed Trainings, Target Audience and Training Methods

Training Topics	Target Audience	Training Methods
National environmental, social and climate policies, legislation, regulations and administrative frameworks requirements	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers, Leaders of farmers and fishers groups, Leaders of Seaweed farmers and Leaders of Beach Management Units/Fisheries Cooperatives	Training workshops/seminar organized at respective centres/offices of implementing agencies
IFAD's SECAP and ENRM, Climate, Land and Disclosure Policies	ADCs, ASA, TARI, TOSCI, Fisheries Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
ESMF processes, procedures and institutional arrangements to develop and implement required safeguards documents, including development of Stakeholder Engagement Plans and Grievance Redress Mechanims	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Environmental, social and climate impact assessment, IPMP, PCR assessment approaches and requirements, environmental and social audits	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Preparation, implementation and monitoring of ESMPs, ESIAs, IPMPs	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Reporting and monitoring the implementation of ESMPs and IPMPs	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Environmental and social best practices – including proper application of chemical inputs, pest management, water saving agronomic practices, soil fertility management, labour saving techniques,	Aqua Farmers groups, Crop Farmers groups, Fishers groups and Beach Management Units/Fisheries Cooperatives	Practical training sessions organized at respective centres/offices of implementing agencies
Conservation agriculture techniques	Farmers groups	Practical training sessions
Sustainable fishing methods, fisheries reporting	Fishers groups and leaders of Beach Management Units/Fisheries Cooperatives	Training workshop

ESMF IMPLEMENTATION BUDGET

The cost estimate for the implementation of activities proposed in this ESMF is USD 572,000. This includes costs for undertaking the environmental and social analyses for Category A and B projects, costs to be paid to NEMC for review of these studies, as well as for carrying out the requisite annual monitoring audits. The budget also provides for, inter alia: preparation and implementation of environmental and social management plans and SOPs; supervision and monitoring of environmental

and social monitoring activities; annual ESC reviews be undertaken by the PCU, and attended by DEMOs, DCDOs, members of the ministry EMUs, and Regional Environmental Officers.

SUMMARY OF KEY ISSUES ARISING AND RECOMMENDATIONS FOR DESIGN

***Project Implementation Arrangements*:** The institutional arrangements for AFDP implementation as presented in the PDR have provided for an Environmental, Social and Climate (ESC) Specialist in the PCU who will be directly responsible for overseeing the environmental, social and climate-related aspects of the Programme interventions. The Programme Coordinator must ensure that the ESC Specialist is adequately facilitated to perform his/her duties.

***Project Categorisation*:** Deep sea fisheries and related processing activities may have significant adverse environmental and/or social implications that warrant further investigation. The impacts on tuna fisheries are sensitive because a number of tuna and tuna-like species are considered to be susceptible to overfishing or are currently overfished. In order to ensure sustainable tuna fisheries, it has been proposed that a Tuna Fisheries Management Plan will be developed and implemented under AFDP's Fisheries Component. Other AFDP subprojects and interventions such as crop seed development activities will have environmental, social and climate-related risks which can be readily mitigated. SECAP requires that the overall Programme category is based on the categorisation of the highest risk activities; thus, the AFDP has been categorised as Category A.

Climate Risk Analysis: The Programme is screened as having Medium Risk, and therefore a Basic Climate Risk Analysis has been prepared for the AFDP. However, the risks of climate change on and from interventions or subprojects need to be assessed as part of the Project Briefs / ESIAs that are required to be prepared, in the context of susceptibility to climatic events in their locations and resilience of the activities to those climatic events.

Physical and Economic Displacement: AFDP will not support subprojects or interventions that will cause any physical or economic displacement. Land to be acquired for demonstration plots, workshops and stores/sheds will be located on Government land, which will be selected provided no economic or physical displacement will take place. The FPIC process is therefore not required to be applied.

Indigenous Peoples: Although indigenous peoples exist in the larger Programme regions, their ancestral areas are not located near any of the Programme activities, and therefore the Programme will not affect any indigenous groups.

Community Involvement in Subproject Implementation: Community involvement will be critical throughout AFDP. In particular, AFDP should work with coastal communities to make them more resilient to the effects of climate change and environmental degradation. In this regard, it is recommended that the AFDP works closely with artisanal fishers, BMUs and Fisheries Cooperatives in Tanzania Mainland and Zanzibar in the sustainable management of the coastal ecosystems on which their livelihoods depend. Thus, they should be involved in developing the proposed Tuna Fisheries Management Plan. In addition, the AFDP should support the development of a Marine Spatial Plan (the preparatory stages of which are already being undertaken by The Nature Conservancy), for which the involvement of coastal communities will be essential.

Capacity Building: While the AFDP's lead agencies (PMO, MoA, MLF) have Environmental Management Units, their officers still need to be trained in IFAD's as well as national environmental and social requirements to ensure environmental and social mainstreaming is done from the very start of the Programme interventions.

1 Introduction

1.1 Background to the Agriculture and Fisheries Development Programme (AFDP)

Agricultural production contributed to about 29.1% of GDP, 47% of exports and provided employment to about 66.3% of Tanzanian households in 2018 (a decline from 71.4% of total employment in 2008), while meeting 95% of the country's food requirements. Tanzania has 95.5 million hectares (ha) of land, of which 44 million ha are classified as arable, with only 23% under cultivation. One third of cropland (4 million ha), is devoted to maize, which accounts for 40% of the national caloric intake. About 80% of agricultural production comes from rainfed, low-input smallholder farms (with an average farm ranging from 0.2 ha to 2 ha) highly vulnerable to weather variability. Key national and regional trends are driving structural changes in the agricultural landscape and food systems in Tanzania, providing new opportunities but also challenges.

Over 75% of rural households in Tanzania depend on beans and other pulses for daily subsistence and beans account for 71% of leguminous protein in diets. Grown by about 4 million households, sunflower is healthier than other types of oil, as it is low in saturated fat and high in polyunsaturated fat. More than 30% of the animal protein consumed in Tanzania comes from fish, which also enrich daily food intake with macronutrients such as lipids and essential and amino and fatty acids.

Agricultural imports have been increasing, with food imports representing the largest share (80%) of total merchandise imports. There is a growing regional export market for beans of different types, estimated at more than 800,000 metric tons (MT) against current export of about 250,000 MT. Tanzania has an estimated demand of 500,000 MT of edible oils, while the total domestic production is estimated at 180,000 MT.

Currently, fish production for 2019/2020 stands at 392,932.82 MT from marine and inland waters. About 85% of the country's fisheries production comes from freshwater inland lakes mainly Lake Victoria, with 14% from marine sources while aquaculture currently contributes just 1%, but with huge undeveloped potential. It is estimated that about 714,000 tons of fish is required to increase per capita fish consumption to 10.5 kg from the current 8.5 kg. This demands 321,000 tons of fish that needs to be added in order to meet this consumption level. On the other hand, the growing export of fish to both international as well as regional markets average slightly over 30,000 tons, implying that local fish production must be increased by 81.7% to meet the export needs. The marine fisheries, especially the Exclusive Economic Zone (EEZ), covering an area of 223,000 km2 can contribute 30% of the total fish required by 2025, however it remains unreachable by local fishers due to, among other things, limited capacity, experience and lack of appropriate fishing vessels suitable for deep sea fishing. On the other side, the national demand for fish seeds is estimated at slightly over 86 million fingerlings, against current production of about 21 million fingerlings. However, given the rising demand, the country will need to produce 250 million fingerlings by 2025.

One major issue of concern is the impact of COVID-19 on Tanzania's fragile food systems and the resultant effect on food production, household food and nutrition security and resilience as well as the country's ability to respond in times of crisis. With the spread of the virus in the continent, containment measures, including social distancing and lockdowns, closing of schools, the prohibition of public gatherings and the closure of non-essential businesses and economic activities, will have far-reaching consequences. There are signs of emerging disruptions on the upstream and downstream links of the food and agriculture chains in Tanzania as the Government of Tanzania (GoT) implements health measures to slow the spread of the virus. Government's efforts to contain the spread of the virus need to be accompanied by measures to minimize disruptions to the food and agriculture systems

and to support the livelihoods and food security of the most vulnerable. Public investments in programmes promoting access to high quality inputs (seeds, fertilizers, fingerlings) and in processing and improving farmers' access to markets are crucial in the post COVID-19 situation.

To address some of the challenges, the Government of Tanzania (GoT) adopted the second Agricultural Sector Development Strategy II (ASDS II 2015/16–2024/25). The goal was to accelerate the transformation of the agricultural sector into modern, commercial, highly productive, resilient and competitive sector in the national and international markets, in accordance with the Tanzania Development Vision 2025. The GoT developed the second phase of the Agricultural Sector Development Programme (ASDP II 2016/2017–2025/2026) with the objective of transforming the agricultural sector (crops, livestock & fisheries) towards higher productivity, commercialization level and smallholder farmer income for improved livelihood, food security and nutrition.

In order to accelerate ASDS II's implementation and delivery of scalable results, the GoT has requested the International Fund for Agricultural Development (IFAD) to finance the Agricultural and Fisheries Development Programme (AFDP). This new programme will provide support to two priority areas of the ASDP II, by contributing to address key sector challenges in the seeds, fisheries and aquaculture value chains, while strengthening institutional capacities of key public institutions and private sector stakeholders.

1.2 Goal and Objectives of AFDP

The AFDP's (2020-2026) overall goal is: *to contribute to inclusive food systems for improved livelihoods, food security, nutrition and resilience*. The Programme's development objective is: *to enhance sustainable productivity, resilience, profitability and commercialisation of selected crop seeds, fisheries and aquaculture*.

1.3 Rationale and Objectives of this ESMF

IFAD's overall objective is for full mainstreaming of environmental, social and climate issues throughout the project cycle. Clear procedures on risk assessment are one important element of this endeavour, to: (i) analyse potential risks and provide information to strengthen the social, environmental and climate dimensions of programmes and projects; (ii) maximize social, environmental and climate change adaptation and mitigation benefits, and avoid or minimize negative impacts; and (iii) increase the consistency, transparency and accountability in decision-making. IFAD's Environment and Natural Resource Management Policy (ENRM, 2011) and Strategy and Action Plan on Environment and Climate Change 2019-2025 stress that project designs present opportunities to improve systematic integration and scaling up of environmental and natural resource management to better respond to climate change. IFAD's Social Environmental and Climate Assessment Procedures (SECAP, 2017) describe how to better mainstream environmental, social and climate change considerations into the project cycle, going beyond "doing no harm" to maximize development gains. In line with IFAD's project cycle processes, a SECAP review note was prepared during design in July 2020.

Most of the proposed interventions will have some significant impacts that can be readily mitigated or remedied, and therefore fall into Category B. These include crop seed development activities (involving small scale irrigation <100ha, seed testing and certification laboratories and a training centre), aquaculture, mariculture involving the establishment of training centres and technologies to improve seaweed farming. However, the proposed tuna fisheries and related processing activities, may have significant environmental and social impacts which may not be easily remedied and would

require more detailed environmental and social analysis, rendering them Category A. The Programme has therefore been accorded Category A.

At this project design stage, the general nature of activities to be supported are known, but specific details of the various interventions are yet to be developed. SECAP requires that in such cases, an Environmental and Social Management Framework (ESMF) must be prepared in order to guide the preparation of Environmental and Social Impact Assessments (ESIAs) or Project Briefs (PBs) / Environmental and Social Management Plans (ESMPs) for the subprojects and interventions.

Tanzania has developed legal frameworks for safeguarding its physical and biological resources. IFAD recognises the need for supporting the Government's efforts to strengthen and use their existing safeguard systems to improve social wellbeing and manage environmental and natural resources.

This ESMF provides guidance to examine the risks and impacts of the various Programme interventions and activities. It sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts. It contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures and appropriate roles, responsibilities and capacity for managing, mitigating and monitoring environmental and social concerns related to the Programme. It includes information on the area in which activities are expected to be sited, including any potential environmental and social vulnerabilities of the area; and on the potential impacts that may occur and potential mitigation measures. It also includes institutional mechanisms to allow the lead agencies to implement the recommended measures.

This ESMF therefore:

- Describes standard preventive actions and mitigation measures for AFDP interventions to address any potential adverse environmental or social impacts;
- Presents preliminary screening of proposed AFDP activities, in order to determine the category of the activities/interventions and thereby define the extent to which environmental and social analysis needs to be undertaken;
- Describes implementation procedures for the preparation of ESIAs and ESMPs, submission, review and clearance of ESIA/ESMP documents;
- Describes information disclosure procedures;
- Describes grievance redress mechanisms (both informal and formal channels) to be adopted for resolving complaints;
- Assigns roles and responsibilities of the various actors in implementing the ESMF;
- Recommends capacity building and training measures to ensure that both ESMF and subsequent ESMPs will be effectively implemented;
- Provides an estimated budget for implementation of preventive actions and/or mitigation measures recommended in the ESIAs and Project Briefs/ESMPs, and for monitoring to be included in the overall subproject costs; and
- Makes recommendations for design in order to improve environmental, social and climate-related management during the implementation of AFDP.

1.4 Approach and Methodology used for the Preparation of the ESMF

The preparation of this ESMF has been guided by IFAD's policies and SECAP as well as the United Republic of Tanzania's legal framework for environmental and social management. The ESMF conforms with IFAD's safeguard policies, including its Policy on Disclosure of Documents (2010), Environment and Natural Resources Management Policy (2012) and Social, Environment and Climate

Assessment Procedures (SECAP, 2017) and Strategy and Action Plan on Environment and Climate Change 2019-2025. These are also summarised in Chapter 3.

The ESMF study was undertaken between March and July 2020. The study methodology comprised: collection and review of primary and secondary baseline data; consultations with key stakeholders and Programme area communities; site visits to Morogoro, Pwani, Geita, Tabora and Zanzibar; and report writing.

The project description in this ESMF is as described in the AFDP Project Design Report (PDR) dated July 2020.

The ESMF study team, field itinerary and study timelines are presented in Annex 7.

1.5 Stakeholder Consultations

At the national level, the team met GoT representatives in Dodoma and Dar es Salaam from the Prime Minister's Office (PMO), Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries (MLF); Ministry of Finance and Planning Tanzania Mainland (MOFP-TZ), National Environment Management Council (NEMC), Tanzania Meteorological Agency (TMA), National Bureau of Statistics (NBS), Department of Water Resources in the Ministry of Water (MOW). In Zanzibar, the team met with representatives from the Ministry of Finance and Planning Zanzibar (MOFP-ZNZ), and Ministry of Agriculture, Natural Resources, Livestock and Fisheries of Zanzibar (MANRLF) and Deep Sea Fishing Authority (DSFA). Other agencies consulted included Tanzania Agricultural Research Institute (TARI), Agricultural Seed Agency (ASA), Tanzania Official Seed Certification Institute (TOSCI), Aquaculture Development Centre (ADC), Tanzania Fisheries Research Institute (TAFIRI), Tanzania Fisheries Cooperative (TAFICO), Zanzibar Fisheries Cooperative (ZAFICO). In addition, discussions were also held with The Nature Conservancy (TNC), the International Union for the Conservation of Nature and Natural Resources, the Indian Ocean Tuna Commission (IOTC), among others.

In addition, discussions were held in the field with crop farmers, agrodealers, sunflower processors, aquafarmers, fishers, and owners of private fishing boats and seaweed farmers.

The list of all persons consulted is presented in Annex 2. Details of the outcomes of consultations are presented in Chapter 6

1.6 Disclosure of this ESMF

IFAD's Policy on the Disclosure of Documents (2010) requires full disclosure to the public, and includes information notes on projects being developed for Board presentation, agreements for approved loans and grants, and project/programme design documents which include ESIAs, ESMFs, RAPs and RAFs. AFDP has been categorised as SECAP Category A; therefore, this ESMF will be disclosed for a period of 120 days on IFAD's official website (http://www.ifad.org).

In addition, although disclosure of ESMFs are not provided for under the Tanzania or Zanzibar environmental frameworks, this ESMF will be shared by the Prime Minister's Office (PMO) with the Vice President's Office (VPO) for validation and approval for disclosure. Thereafter, this ESMF will be disclosed on PMO, MoA, MLF and MANRLF websites, and also at the Programme districts, so that all interested parties are able to access the document.

1.7 Limitations and Assumptions

Limitations

The main limitations in the preparation of this ESMF have been:

- This ESMF has been prepared during the COVID-19 pandemic, which has restricted travel to Tanzania by some members of the ESMF team. Nevertheless, site visits were conducted by team members based in Tanzania.
- Due to time limitations and the extent of the Programme area, it was not possible to visit all the potential project regions and locations. Thus, baseline data has been sourced mainly from secondary data. Where available, baseline data has been enhanced with primary data from discussions with key stakeholders and the project design team, and from project design documents (eg. PDR, SECAP review note).
- For the same reasons quoted above, although consultations were undertaken with key beneficiary groups, it was not possible to conduct extensive participatory stakeholder consultations.
- At this stage, while types of interventions have been identified, the exact number and sizes of the various interventions are still to be confirmed. While the interventions and subprojects have been screened for categorisation purposes, due to the large number of interventions and the time limitations to visit all prospective sites, the extent of environmental and social analyses that will need to be prepared for each site cannot be accurately determined at this stage. Therefore, the costs provided for these studies are estimates.
- IFAD's Social, Environmental and Climate Assessment Procedures recommend that, where feasible, a validation workshop is held to present and validate the findings and recommendations of any preparatory studies. In this case, due to the travel restrictions imposed as a result of the COVID-19 pandemic and the reduced number of participants that would be able to attend the workshop, it is recommended that the validation workshop for this ESMF be held during Programme start-up, during which time the ESMF procedures in the Programme Implementation Manual will also be refined.

Assumptions

The assumptions made are as follows:

- This ESMF is intended to be an "umbrella document" to guide the preparation of all environmental, social and climate analyses to be prepared under the Programme. Specific ESIAs and Project Briefs/ESMPs will be prepared for each intervention, as required by their screening category.
- Physical and economic displacement as defined under SECAP's Guidance Statement #13 will not occur, since the sites for markets, aquaculture demonstration sites, etc, will be on government-owned land. Hence there will be no need for FPIC or for preparing resettlement action plans.
- Although indigenous groups exist in the larger Programme regions, their ancestral areas are not located near any of the Programme activities, and therefore the Programme will not affect any indigenous groups.
- The Programme will have a number of knock-on or indirect impacts, such as expanded fishing, expansion in the acreage of land under cultivation (and associated increase in the use of agrochemicals) and establishment of agro-based SMEs. It is assumed that the local authorities, together with NEMC, will be responsible for monitoring and managing any adverse environmental and social impacts due to these activities.

1.8 Report Presentation

This report contains twelve (12) chapters and seven (7) annexes.

Chapter 1 sets the context of the ESMF by describing the background to AFDP, the Programme's goals and objectives, as well as rationale. The methodology for developing the ESMF is described, as well as an overview of stakeholder consultations held. It also presents disclosure requirements for the ESMF, and limitations and assumptions made during the preparation of this ESMF.

Chapter 2 describes the Programme target regions and its components. Chapter 3 summarises the policy, legal and institutional framework for environmental, social and climate-related management in the United Republic of Tanzania. It presents IFAD's Safeguard Policies, describes differences in IFAD and GoT/ZNZ policies and the requirements of international conventions and treaties to which Tanzania is party.

Lessons learned from completed and IFAD-supported projects as well as projects supported by other development are summarised in Chapter 4.

Chapter 5 presents an overview of the environmental and social setting of the Programme regions. Chapter 6 summarises the outcome of the consultations held during the preparation of this ESMF.

Typical environmental, social and climate-related impacts due to AFDP activities and interventions, as well as an overview Environmental and Social Management Plan are presented in Chapter 7.

Chapter 8 discusses climate risk and its implications on the Programme.

Chapter 9 describes the environmental, social and climate change management procedures for AFDP; these procedures are expected to be incorporated into the Project Implementation Manual. Chapter 10 discusses capacity building needed to implement the requirements of the ESMF, while Chapter 11 gives an estimated budget for the implementation of the ESMF.

Chapter 12 summarises the key environmental, social and climate risks and makes recommendations for those risks that should be considered during the Programme development and design.

The Annexes contain: References; List of Stakeholders Consulted; Terms of Reference for the Environmental, Social and Climate Specialist for the PCU; Screening and Categorisation of AFDP Interventions; Guidelines for an Integrated Pest Management Plan; Stakeholder Identification Matrix; and Study Team, Study Itinerary and ESMF timelines.

2 Description of the Agriculture and Fisheries Development Programme

The following description of the AFDP is based on the Project Design Report (July 2020).

2.1 Overview of the Programme Area Characteristics

AFDP will focus on drier agro-ecological zones (AEZ) with unimodal rainfall of the central Tanzania Mainland corridor, targeting sustainable intensification and diversification of more vulnerable production and farming systems (crops and aquaculture), highly susceptible to climate variability and change. The programme will also promote sustainable fisheries management for improved livelihoods of coastal fishing communities in Zanzibar and Mainland Tanzania. The programme targets a total of 42 districts in 10 regions (as shown in Table 2-1 below) as well as four marine conservation areas in Unguja and Pemba, Zanzibar.

Table 2-1: AFDP Target Areas

Zones	Regions/Marine Conservation Areas	Districts
Central	Morogoro	Mvomero, Kilosa, Kilombero, Gairo Morogoro Council
	Manyara	Kiteto, Mbulu, Babati, Hanang
	Singida	Manyoni, Ikungi, Singida, Mkalama, Iramba
	Dodoma	Kongwa, Kondoa and Chamwino, Bahi, Mpwapwa, Chemba
	Tabora	Igunga, Nzega and Uyui
Lake zone	Mwanza	Misungwi, Kwimba and Sengerema
	Shinyanga	Kahama and Shinyanga
	Geita	Bukombe, Geita, *Sengerema* and Chato
Coastal	Tanga	Handeni, Kilindi, Pangani, Muheza and Mkinga
	Pwani	Bagamoyo, Mkuranga, Kilwa, Kibaha and Mafia
Zanzibar	Marine conservation areas - Unguja	Tumbatu, Mnemba – Chwaka Bay, Menai Bay
	Marine conservation areas - Pemba	Pemba channel

Source: AFDP Project Design Report, July 2020.

The Programme areas is illustrated in Map 1 above.

2.2 Target Groups and Targeting Strategy

The total number of direct beneficiary households is 363,000 corresponding to approximately 1,815,000 persons. This represents about 15% of the total rural population across the selected regions. These include:

i. 300,000 small holder farming households accessing, using and maintaining improved seeds for preferred varieties of maize, sunflower and beans/pulses;

ii. 2,000 small and medium scale seed producers and agrodealers participating in seed distribution and marketing;
iii. 49,000 artisanal fishers, fish processors and traders along the Indian ocean coast of Mainland and Zanzibar;
iv. 6,000 small holder aquafarmers;
v. 15,000 smallholder seaweed producers and processors (80%women), and
vi. 2,000 unemployed youth who will find employment opportunities in seed and fish value chains.

The targeting mechanism will seek to ensure equitable participation in, and benefits from, programme activities for women, men, youth and other vulnerable groups. These will include smallholder subsistence crop farmers, and fishers, small and medium agro dealers and multipliers, traders, entrepreneurs and other actors involved in the different value chains, based on geographical and poverty targeting, direct targeting and self-targeting, as follows:

The targeting strategy comprises:

a) Geographic targeting, based on the identification of priority districts;
b) Self-targeting, with activities geared towards the needs of poor producer households that are engaged in crop and fisheries activities;
c) Direct targeting of very poor and/or marginalised households, including youth;
d) Empowerment and capacity building measures to ensure that each target group is able to access the proposed activities; and
e) Enabling environment and policy dimensions so as to ensure a conducive environment for the project to be implemented and sustainability of its results.

AFDP will target 50% women and 30% youth through its interventions.

2.3 Programme Components

The Programme will comprise two main components, supported by a third component to cover management and coordination of Programme activities. These components are summarised in Table 2-2 below:

Table 2-2: AFDP Components

Component/Subcomponent	**Interventions and Activities**
Component 1: Enhanced Productivity of crop seeds, fisheries and aquaculture	
The expected outcome of this component is "increased climate-resilient productivity and production from crop seed and fish value chains". It will be achieved by focusing investments in two sub-components, namely (i) crop seed systems development and (ii) fisheries and aquaculture development.	
Subcomponent 1.1: Crop seed systems development	
National seed demand and supply coordination.	• Support to the Ministry of Agriculture (MoA) and the Tanzania Seed Traders Association (TASTA) for future seed demand and supply planning; • Support multi-stakeholder seed sector fora at national level (MoA and TASTA), and small and medium seed production and distribution enterprises/cooperatives; • Facilitate development and effective use of digital platforms for planning, coordinating and monitoring of seed production, supply and sales by different stakeholders including specialized technical studies as required.
Innovation development and Early Generation Seed production	• Upgrading facilities for EGS (breeder and pre-basic seed), including irrigation facilities (each farm being 25 ha), farm and post-harvest equipment, scientific/ laboratory equipment, storage facilities, field vehicles for research in maize, sunflower, maize and beans/pulses; • Strengthening institutional capacity and technical expertise in maize, sunflower and bean/pulses varietal improvement and innovative production practices (i.e. CSA);

Component/Subcomponent	Interventions and Activities
	• Enhancing scientific collaboration with regional and international knowledge centres, especially in germplasm access and market-oriented seed systems development; • Strengthening emerging partnerships between TARI and private seed producers/companies, including for variety licensing.
Basic seed multiplication	• Aligning and consolidating the ASA business plan for the three targeted crops (maize, sunflower, beans/pulses); • Securing basic seed production by upgrading/completing of irrigation infrastructures for not exceeding 100 ha each in ASA farms at Msimba (Kilosa/Morogoro) and Kilimi (Nzenga); • Upgrading selected farm work (seed stores, garage facilities); • Renewing targeted field production equipment (adapted implements for land preparation, seeding, plant protection and harvesting); • Supplying required seed processing treatment and transport equipment; • Strengthening ASA business capacities and partnerships with private certified seed multipliers and agro-dealer network.
Bulking-up certified seed	• Capacity building for certified seed production. • Linking private seed producers/SMEs/cooperatives with financial institutions and TADB
Dashboard for seed production	• Electronic dashboard indicating projections for pre-basic, basic and certified seed in tons/annum
Seed quality control and certification	• Enhancing technical and management capacities of seed inspectors, samplers and analysts; • Strengthening seed quality control and certification procedures and guidelines, including technical support as required; • Promoting third party seed certification and data management to strengthen private sector production systems • Rolling-out of the electronic systems for digitized authentication of quality seeds by farmers and reduce fake seeds (in collaboration with other partners) • Enhancing overall technical and management/ business capacities towards TOSCI self-financing towards International Seed Testing Association (ISTA) standard seed quality control and certification system in Tanzania.
Subcomponent 1.2: Fisheries and aquaculture development	
Development of sustainable artisanal marine fisheries production systems	• Supporting artisanal fishers to access the recommended gears suitable for sustainable fishing in this zone, ideally to replace destructive gears and aiming to reduce the fishing effort; • Promoting selective fishing practices by the use of Fish Aggregating Devices (FADS); • Improving the utilization of catch and reduce post-harvest losses; • Supporting access to increased quantities of ice for their fishing operations; • Strengthening fishers' co-operative organizations and streamline the marketing arrangements and processes from sea to market in order to enhance value of catch.
Private-Public-Producer Partnerships (4Ps) joint venture for fishing in the EEZ	• Conducting detailed feasibility studies and updating/refinement of existing business for the operation of fully equipped marine fishing investments; • Support to implementation of Tuna Fisheries Management Plan; • Providing technical assistance for structuring of 4P and development of bankable business models; and for brokering partnerships and developing adapted financing instruments; • Financing the procurement of a maximum of eight fully equipped marine fishing vessels (18-25 m long liner with 30-45 MT capacity) based on financing instruments and partnership modalities developed above; • Financing the formulation/revision and implementation of a sustainable Tuna Fisheries Management Plan including that will include monitoring of stocks and catches on a regular basis.
Increasing aquaculture productivity and output	• Rehabilitating/developing basic infrastructure for hatchery production (including water supply systems, access roads, hatchery facilities, feed mill and equipment etc.) in 3 ADCs (Kingolwira, Mwamapuli and Rubambagwe); • Developing the Kingolwira ADC to become a breeding nucleus for producing quality broodstock to be multiplied in other ADCs and thereafter distributed to private hatcheries for mass production of fingerlings; • Strengthening the capacity of ADCs to provide hands-on training on best management practices of aquaculture to aquafarmers and service providers as well as technical support to aquaculture enterprises;

Component/Subcomponent	Interventions and Activities
	• Establishing linkages with the small and medium scale enterprises grain millers (possibly linked to the crop seed value chains under the Programme) for the supply of fish feed; • Supporting extension services and community outreach including use of lead aquafarmers to make aquaculture economically viable and sustainable (e.g. water channels, standard ponds etc.), improved access to inputs, including capacity to produce locally-made feeds, etc.
Increasing mariculture productivity and output	• Improving the quality of seaweed seeds, by developing capacity to produce high quality seedlings for the two common varieties namely *Euchaema cottonii* and *E. spinosum*, through improved vegetative propagation and other technologies; • Promoting new seaweed production methods and labour-saving technologies (small boats to access farming grounds in the ocean, and rafts for seaweed farming); • Promoting incentives to encourage youth participation, so as to increase productivity • Rehabilitating 2 mariculture training centres in Zanzibar, aiming to train 1,000 youth and 15,000 women on improved seaweed farming technologies, with a target to raise production to nearly 20,000 tonnes per year by end of the programme
Component 2: Improved market access, value addition and private sector development	
This expected outcome of this component is "improved marketing and value addition of crop seeds and fish products". It will be achieved by combining investments in crop seed business development and fish market development and value addition. Support provided under this component will also include innovative modalities to finance technical assistance and productive investments to support production, marketing, and processing activities.	
Subcomponent 2.1: Quality seed use and business development	
Regional multi-stakeholder innovation platforms	• Facilitating the organization of annual stakeholder platforms of seed value chain actors in each target region; • Coordinating planning, implementation and monitoring of regional seed use and promotion activities in selected value chains; • Supporting the emergence/strengthening of district and regional professional seed producer organisations for maize, beans and sunflower value chains.
Promoting supply and access to improved seeds	• Enhancing partnerships with national/regional seed producers (TASTA) and agricultural input importers to strengthen the local agrodealer distribution networks in all targeted districts; • Developing further the last link for seeds and inputs to reach local farmers, especially women and youth (village input shops/outlets); • Facilitating grouped farmers organisations' purchases of agricultural inputs; • Providing opportunities and financing for young entrepreneurs to participate in seed business and distribution. • Linking private agrodealers to these financial institutions for working capital and asset financing (for storage and transportation) to increase their capacity to supply seeds and other inputs to farmers.
Promoting awareness and demand for improved seeds	• Enhancing farmer exposure to innovative technologies (varieties, best practices for on-farm seed multiplication and preservation), including famer field schools, on-farm demonstrations, seed samples distribution for on-farm testing, field days, seed fairs, farmer exchange, etc.; • Empowering farmer organizations to provide sustainable technical and management services to their members through Village-Based Advisors (M/F local farmer leaders); • Leveraging relevant digital platforms and facilitate of broad use of information communication technologies and tools (mobile phones and tablets) for large scale dissemination of quality seeds and improved varieties; • Facilitating access to financial services for the farmers and their organizations for the purchase of seeds and other inputs.
Facilitating technical and business synergies for effective market linkages with grain buyers and processors	• Promoting with large/medium-scale sunflower oil extraction businesses for promoting contract farming, pricing agreement on product quality, use cake for animal/fish feed, etc.; • Promoting synergies with commodity whole sellers especially for pulses (but also maize) for contract production, pricing agreements, but also enhancing use of low grades for animal/fish feed; • Promoting collaboration with the Pan African Bean Research Alliance for the implementation of bean business corridor through lead firm model nested in private public consortium; • Leveraging financing instruments through TADB to finance off takers, grain businesses and processors.
Subcomponent 2.2: Fish market development and value addition	

Component/Subcomponent	Interventions and Activities
Reducing post-harvest losses through cost sharing investments in:	• Eight (8) ice-making plants to ensure fishers have access to ice; • Three (3) cold-supply chain facilities and integrated fish processing plant; • Ten (10) solar dryers/tents for seaweed and small-pelagic "dagaa"; • 80 dagaa drying racks; • Construction of two (2) fish markets to improve quality of fish onshore.
Increasing value/income from aquaculture production	• Developing/strengthening the ADC-Farmers clusters and linkages with private sector hatcheries; Establishing aquaculture field/business schools to facilitate learning for fish farmers reaching youth and women; • Enhancing collective marketing strategies; • Expanding market horizon for farmed fish and basic cold chain facilities (e.g. cool boxes).
Seaweed processing and marketing	• Conducting market and value chain analysis of seaweed; • Strengthening seaweed clusters and cooperative societies to enhance access to markets and increase the competitiveness of seaweed value chains and identify opportunities for improving the competitiveness of seaweed; • Equipping women cooperatives and groups with seaweed processing and value addition equipment (seaweed drying racks and solar dryers, milling machine/plant, packaging materials) and enhancing their capacity on standards and quality control; • Facilitating the emergence of seaweed small and medium enterprises and their linkages with financial institutions and business service providers; • Promoting the engagement of youth in seaweed value chain activities to increase sector productivity and create employment.
Component 3: Policy Engagement and Programme Management and Coordination	
Subcomponent 3.1: Policy engagement and institutional strengthening	
Policy engagement	• Data management • Institutional reforms in public institutions (ASA, TAFICO, ZAFICO and cooperative societies) toward business development and 4P business models; • Development of aquaparks approach; • Scaling up strategy.
Subcomponent 3.2: Programme management, coordination, monitoring and evaluation (M&E)	
Implementation Readiness and Start-up Plans	• National and regional workshops; • Refinement PIM and Programme design.
Planning, monitoring and evaluation	• Preparation of annual workplans and budget; • Activity planning; • Baseline surveys.
Supervision and implementation support missions	• Biannual joint supervision and implementation missions.
Mid-Term Review (MTR) and Programme Completion Review	• MTR in Year 3; • PCR in Year 6.
Learning and knowledge management (KM)	• Preparation of KM strategy involving digital technologies, regular review meetings with implementing partners to discuss progress towards expected outcomes, learning tours and the production and dissemination of a variety of communication products to a wide audience of stakeholders.
Subcomponent 3.3: Emergency response and recovery post COVID-19	
	• Support for immediate response to an eligible crisis or emergency, as needed, in coordination with the PMO

2.4 Institutional Arrangements and Responsibilities for Programme Implementation

The overall programme coordination will be under the Prime Minister's Office (PMO), which is responsible for coordinating the implementation of ASDP-II. GoT will appoint a Programme Steering Committee (PSC) to provide strategic guidance and oversight of the Programme. The PSC will be chaired by the Permanent Secretary PMO and will be composed by the Permanent Secretaries of the ministries in charge of agriculture, fisheries, finance and planning, and local government from the Mainland and Zanzibar, as well as representatives from the private sector and farmers' organizations. The Programme Steering committee will meet twice a year.

The Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries (MLF) and Ministry of Agriculture, Natural Resources, Livestock and Fisheries, Zanzibar (MANRLF-ZNZ) are jointly responsible for implementation of the programme. They will establish a joint Programme Technical Advisory Committee (PTAC) to (i) advise the Programme Steering Committee and the Programme Coordination Unit (PCU) on technical issues, (ii) provide oversight of implementation and performance monitoring of the implementing agencies; (iii) follow up on the implementation of PSC decisions and recommendations; (iv) mobilize technical expertise and ensure coordination and synergies with other existing projects and initiatives; and (v) and facilitate policy engagement. The joint PTAC will be chaired by the Director of Policy and Coordination of Government Business in the PMO, to ensure programmatic synergies, integration and coherence between programme components. It will be composed of the relevant Directors from MoA (Policy and Planning, Crop Development and Extension services), MLF (Policy and Planning, Aquaculture and Fisheries) and MANRLF-ZNZ (Policy and Planning and Fisheries) as well as the Ministry of Finance and Planning (MoFP) Tanzania Mainland, and MoFP Zanzibar. It will also comprise two representatives from participating Districts. The PTAC will meet on a quarterly basis in each ministry and jointly twice a year.

Each participating ministry will establish a Technical Working Group (TWG) to review and scrutinize implementation of the programme interventions, and to provide technical guidance to the program implementing institutions and the LGAs. At each ministry the Technical Working Group will be chaired by Director of Policy and Planning from implementing ministries. TWG will have members from Policy and Planning, Aquaculture, and Fisheries, one representative from ADCs and two representatives from participating Districts for MLF. For MoA it will include Director of Policy and Planning, Crop Development, Extension services, one representative from TASTA and two representative from participating Districts. Each ministry will appoint a Focal Person who will be the main points of contact for coordinating technical support to the implementing institutions and LGAs in the project areas. The ministerial technical working group will meet on a quarterly basis in each ministry and jointly twice a year.

The Programme will establish a semi-autonomous Programme Coordination Unit (PCU) under the PMO, to complement existing ASDP II coordination and management structure. It will comprise of the following key staff competitively selected: (i) Programme Coordinator, (ii) Programme Monitoring & Evaluation and Knowledge Management (ME&KM) officer, (iii) Business Development and Value Chain specialist, (iv) an Environmental, Social and Climate Specialist (in the first years of the Programme as required for Category A status) and (v) Finance Officer. A smaller Programme coordination team, comprised of a (i) Team Leader, (ii) value chain development expert and (iii) a finance officer, will be established in Zanzibar under the MANRLF. The PCU will leverage technical expertise in the implementing partner institutions both and central and districts levels and will mobilize technical assistance to provide strategic guidance and oversight on targeting, women and youth empowerment, as well as nutrition targets of the Programme.

Government institutions, namely TARI, ASA, TOSCI, TAFICO, ZAFICO and ADC will be responsible for specific activities and will develop a business and implementation plan for delivering specific results as detailed in the Programme Design Report and the Implementation Manual. Other implementing partners will include TASTA for coordinating seed demand and supply, TADB for facilitating access to finances; SWOFISH and The Nature Conservancy (TNC) for the development and implementation of Tuna Fisheries Management Plans; seaweed production, processing and value addition. The Programme will also recruit selected service providers for promoting youth entrepreneurship and facilitating linkages with downstream value chain actors, on a basis of performance contracts.

District level programme implementation will adhere to the existing structures, which comprise the District Executive Director, assisted by a District Focal Person, the specialist for fisheries, aquaculture and crop seeds, who will work closely with the existing District Facilitation Team to deliver targeting, nutrition, women empowerment, youth and climate change and environment targets.

3 Institutional, Policy and Legal Framework for Environmental Management in Tanzania

This chapter presents an overview of the institutional, policy and legal framework for environmental management in Tanzania.

3.1 Policy, Legal and Institutional Framework

The United Republic of Tanzania has several policies, legislations and institutional frameworks to regulate and address environmental, climate and social inclusion thematic areas for both sides of the union. This is illustrated below in Table 3-1 for Tanzania Mainland and Table 3-2 for Zanzibar.

3.1.1 Tanzania Mainland

Table 3-1 below illustrates the policy, legal and institutional framework for Tanzania Mainland.

Table 3-1: Policy, Legislative and Institutional Framework for Environment, Climate and Social Inclusion in Tanzania Mainland

Thematic Area	Policies/Legislations/Guidelines/Strategies/ Action Plans	Key Institutions
Environment and climate change	The Environmental Management Act 2004, Occupational Health and Safety Act, 2003, Public Health Act, 2009, Forest Act No. 14 of 2002; Environmental Impact Assessment and Audit (Amendment) Regulations of 2018, Environmental Management (Solid waste Management) Regulation, 2007, Strategic Environmental Assessment Regulations of 2008, The Environmental Management (Water Quality Standards) Regulations, 2007, Environmental Management (Registration of Environmental Experts) Regulations (2005), The Environmental Management (Fee and Charges) (Amendment) Regulations, 2019, National Environmental Policy (1997), National Forests Policy (1988), National Climate Change Strategy, 2012, National Adaptation Programme of Action, 2007, National Integrated Coastal Environment Management Strategy (2003), Disaster Management Act, 2015.	Vice President's Office - Division of Environment National Environment Management Council National Climate Change Technical Committee and National Climate Change Steering Committee
Agriculture	The Seeds Act, 2003, Village Land Act No. 5 of 1999, Plant Protection Act of 2002, National Land Policy (1995), Agricultural and Livestock Policy (1997), Irrigation Policy (2010), Pesticides Control Regulations, 1984, Industrial and Consumer Chemicals (Management and Control) Act, 2003, Land Use Planning Act, 2007, National Agriculture Policy (2013, Fertilizer(Bulk Procurement)Regulations,2017, Plant Breeders Rights Act of 2012, The Seeds (Control Of Quality Declared Seeds) Regulations, 2020,The	Ministry of Agriculture ASA, TOSCI, TARI

Thematic Area	Policies/Legislations/Guidelines/Strategies/ Action Plans	Key Institutions
	Seeds Regulations, 2007. Agricultural Sector Development Strategy II, 2017, Tanzania Agriculture and Food Security Investment Plan (TAFSIP) 2011-12 to 2020-21, Tanzania Development Vision 2025, Five Year Development Plan 2016/17 – 2020/21, Tanzania Agricultural Research Institute Act, 2016	
Fisheries	Fisheries Act, 2003, Fisheries Regulations of 2005; Marine Parks and Reserves Act, 1994, Water Resources Management Act, 2009, Water Utilization and Sanitation Act of 2009, National Water Policy, 2002, The National Fisheries Policy (2015), The Standards Act No. 2 of 2009. Wildlife Conservation Act, 2009, Marine Parks and Reserve Act, 1994, Territorial Sea and Exclusive Economic Zone Act, 1989, Deep Sea Fishing Authority(Amendment) Act, 2007, Deep Sea Fishing Authority Regulations, 2009, Public Private Partnership Act and Regulations, 2020; . Fisheries (Prohibition of Use of Specified Vessels or Tools) Regulations, 1994, Ports Act, 2004 (No. 17 of 2004), Merchant Shipping Act, 2003, Surface and Marine Transport Regulatory Authority Act, 2001, Merchant Shipping (Licensing of Unregistered Vessels) Regulations, 1990, Public Private Partnership Act, 2010	Ministry of Livestock and Fisheries, Deep Sea Fishing Authority, Tanzania Shipping Agencies Corporation, Ministry of Finance, Bagamoyo District Council, Pangani District Council, Mafia District Council and Kilwa District Council
Nutrition	The National Health Policy 2017, Food and Nutrition Policy, 1992, The Tanzania Food and Nutrition Act, 1973, Tanzania Food, Drugs and Cosmetics Act, 2003, Food Security Act, 1991	Ministry of Health, Community Development, Gender, Elderly and Children Tanzania Food and Nutrition Centre
Gender	Employment and Labour Relations Act, 2004, The National Employment Policy (1997), Policy on Women in Development in Tanzania of 1992; Women and Gender Development Policy of 2000; Community Development Policy of 1996; National Economic Empowerment Policy of 2004; National Land Policy of 1995	Ministry of Health, Community Development, Gender, Elderly and Children, Ministry of Labour, Employment, and Youth Development
Youth	Youth Development Policy,2007	Ministry of Labour, Employment and Youth Development, Ministry of Information, Culture, Youth and Sports

Relevance of Selected Legislations to AFDP in Tanzania Mainland

Environmental Management Act 2004

Environmental Management Act of 2004 is a framework Act (a comprehensive umbrella) in that it is the legislation governing environmental aspects in Tanzania. The Act includes provisions for; legal and institutional framework for sustainable management of environment; an outline of principles for management, impact and risk assessments, prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement; and the basis for implementation of international instruments on environment. Under this Act, the minister of Environment has powers to make regulations to enable enforcement of the Act. In this regard, EIA and

Audit regulations of 2005 were formulated and later amended in 2018. These regulations are considered most effective for the achievement of sustainable development because they lay down procedures on how environmental impact assessment shall be undertaken for all proposed activities that are likely to have significant adverse impacts on the environment and which are subject to a decision of a competent national authority. The EIA and Audit regulations have categorize all projects in three groups; Type A, B1 and B2. While Type A projects fall under the list of activities that require full Environmental and Social Impact Assessment, type B1 are those activities which may or may not require full ESIA. Type B2 projects are activities that do not require full ESIA but just preparation of detailed project brief with environmental and Social Monitoring plan. In this regard, all proposed activities under AFDP have been scrutinized and categorized according to relevant groups they belong so that respective studies can be undertaken before implementation. For all activities that are not listed in the regulations, expert's judgement shall be applied to determine whether there is need for environmental studies or not.

Seeds Act (No. 18 of 2003) and its regulations

The Seeds Act applies both to public and private actors in the seed industry and not only delegates regulatory authority and establishes some of the main governmental institutions but also defines the role and duties of seed inspectors, delineates offenses, and establishes penalties for violation of its provisions. The Seeds Act is critical to Tanzania's seed system and lays out the procedure for variety release and registration, certification, seed dealer registration, and general requirements for the importation and exportation of seeds, all of which are elaborated in more detail in the Seeds Regulations of 2007. The Seeds Act and Seeds Regulations touch upon almost all aspects of the seed value chain and provide an important roadmap for the variety release and registration process, certification process, and other regulatory aspects of seed sector development such as packaging, labelling, marketing, and sale of seed.

Since AFDP aims at improved marketing and value addition of seeds value chain in Tanzania, the existing regulatory framework serves to provide an enabling environment for this objective to be achieved. Therefore, the program will be implemented in line with existing laws and regulations governing seed system in the country.

Fisheries Act, 2003

The fisheries Act of 2003 has been put in place to protect the fisheries resources available in natural water bodies from unsustainable exploitation. In line with the Act, the fisheries regulations of 2005 provide guidance on aquaculture development by, among other things, regulating aquaculture and human activities such as restricting import, export and introduction of new species. Since AFDP aims at having sustainable artisanal marine fisheries production systems, the fisheries Act and its regulations form an important legal framework in which the program will be implemented.

Public Private Partnership Act of 2010, and Regulations, 2020

This Act and its Regulations provide for the institutional framework for the implementation of public private partnership agreements between the public sector and private sector entities; to set rules, guidelines and procedures governing public private partnership procurement, development and implementation of public private partnerships and to provide for other related matters. The Act and its Regulations are of particular relevance to the deep sea fisheries subcomponent of this Programme. It requires a preliminary environmental and social analysis at the pre-feasibility stage, and an environmental and social impact assessment at the feasibility stage – the full ESIA and ESMP, together

with a Community Engagement Plan and Resettlement and Livelihoods Protection Plan are required as annexes to the feasibility study.

3.1.2 Zanzibar

Table 3-2 below illustrates the policy, legal and institutional framework for Zanzibar.

Table 3-2: Policy, Legislative and Institutional Framework for Environment, Climate and Social Inclusion in Zanzibar

Thematic Area	Policies/Legislations/Guidelines/Strategies/ Action Plans	Key Institutions
Environment and climate change	Zanzibar Environmental Management Actof 2015, Environmental Assessment Regulations, 2017, Conservation Areas, Reserves, Parks and Sanctuaries Act, 1994, Territorial Sea and Exclusive Economic Zone Act, 1989, Deep Sea Fishing Authority Act, 2007, National Environmental Policy for Zanzibar (2013), The Establishment of Zanzibar Nature Conservation Areas Management unit Act (1999), Forest Resources Management and Conservation Act (1996), National Forest Policy for Zanzibar (1995), National Disaster Management Policy, 2011	1st Vice President-Department of Environment, Ministry of Land, Water, Energy and Environment, Zanzibar Environmental Management Authority (ZEMA)
Agriculture	Land Tenure (Amendment) Act (2003), Agricultural Sector Policy, 2003 Zanzibar Agricultural Transformation For Sustainable Development, 2010-2020, Zanzibar Vision 2020, Zanzibar Strategy for Growth and Reduction of Poverty III, or MKUZA III, 2016-2020,	Ministry of Agriculture, Natural Resource, Livestock and Fisheries Management
Fisheries	Zanzibar Fisheries Act (2010), Zanzibar Fisheries Policy (2014), Zanzibar Maritime Act, 2009, Territorial Sea and Exclusive Economic Zone Act, 1989, Deep Sea Fishing Authority Act, 2007	Department of Fisheries, Ministry of Agriculture, Natural Resource, Livestock and Fisheries Management, Zanzibar Maritime Authority
Nutrition	Zanzibar Food Security and Nutrition Policy, 2008, Zanzibar Food Security and Nutrition Act, 2011 Zanzibar National Health Policy (2010)	Department of Food Security and Nutrition of the Ministry of Agriculture, Natural Resource, Livestock and Fisheries Management; Ministry of Health
Gender	National Plan of Action to End Violence Against Women and Children in Zanzibar 2017–2022	Ministry of Labour, Empowerment, Elders, Women and Children
Youth	Zanzibar Youth Development Policy,2005, Youth Employment Action Plan, 2007, Zanzibar Vocational Education and Training Policy, 2005, Zanzibar Employment Policy (2007)	Ministry Youth, Arts, Culture and Sports

<u>Relevance of Selected Legislations to AFDP in Zanzibar</u>

Zanzibar Environmental Management Act, 2015

This Act repealed Environmental Management for Sustainable Development Act Number 2 of 1996. Among other things, the Act established Zanzibar Environmental Management Authority (ZEMA) and

the office of Director of Environment. The function of Director of Environment revolve around implementation of policies, formulation of national strategies and guidelines and coordination as well as implementation of international environmental agreements. On the other hand, the functions of ZEMA include but not limited to undertaking and coordinating enforcement of the provisions of the Act as well as coordinating the Environmental Impact Assessment process for any activityor investment. ZEMA has been given powers by the ACT to approve any project by way of issuing an environmental certificate. EIA regulations formulated under ZEMA Act guide the process of EIA in Zanzibar.All AFDP activities that require Environmental clearance shall be subjected to EIA process as required by Zanzibar Environmental Management of 2015 Act and its EIA regulations.

Zanzibar Fisheries Act, 2010

The Zanzibar Fisheries Act provides for the conservation of fish resources in the territorial waters and EEZ of Zanzibar. It also provides for the protection of artisanal fishing and aquaculture. According to the Act, the term ”Fisheries” means all marine and fresh water fishing and cultivation and related activities. The Department of Fisheries and the Marine Conservation Unit is established under the Act for performing the following functions: (a) promote, develop, control and monitor for the purpose of proper management of all fisheries and related activities in artisanal and semi industries; (b) build capacity for effective management of fishing and related activities; (c) administer fisheries activities and all marine products from related industries.

Further, according to Fisheries Act, an Exclusive Economic Zone is a controlled area where fishing by foreigners is not allowed except with the consent in writing of the Minister. Fishing activities at the EEZ is controlled by Deep Sea Fishing Authority. The Act also stipulates Marine Conservation Areas (MCAs) are multiple use marine management areas that are run through "co-management" approaches between the Government and the local communities. Since some of activities under AFDP will be implemented in the EEZ and Marine Conservation areas of Zanzibar, the Zanzibar Fisheries Act and its regulations form important framework under which the program will be implemented.

Deep Sea Fishing Authority Act, 2007

Fisheries in the Exclusive Economic Zone (EEZ) of United Republic of Tanzania is a union matter. The Deep Sea Fishing Authority (DSFA) is an institution established under Deep Sea Fishing Authority Act of 2007. In the absence of a Marine Spatial Plan (MSP) environmental management decisions related to the EEZ are currently made on a sector by sector basis, with overall coordination of environmental management issues done by the Vice President’s Office. DSFA is responsible for EEZ fisheries management and associated environmental concerns and mitigation, whereas much of the ecological research priorities and marine conservation activities are catered for by Tanzania Fisheries Research Institute (TAFIRI) and the Institute of Marine Sciences(IMS), within the framework of the IOTC and in cooperation with various NGOs. Shipping and transportation related issues, including registration of vessels are the responsibility of Zanzibar Maritime Authority (ZMA) and the Tanzania Shipping Agencies Corporation(TASAC) for Mainland, while pollution control falls under the NEMC and ZEMA. Therefore, deep sea fishing activities under AFDP will be implemented in line with the provisions of the DFSA Act and its regulations.

3.2 International Conventions and Treaties

Tanzania is party to a number of international and regional conventions and treaties. These are listed below in Table 3-3, together with their key requirements and relevance to AFDP.

Table 3-3: International and Regional Treaties and Conventions

Instrument	Relevance to AFDP	Status
International		
The United Nations Convention on the Law of the Sea, 1982 (UNCLOS); The Convention on Biological Diversity, 1992 (CBD);Convention on International Trade in Endangered Species of Fauna and Flora 1973(CITES); Convention on the Conservation of Migratory Species of Wild Animals (CMS) 1979; United Nations Fish Stocks Agreement (UNFSA) 1995; The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar) 1971; United Nations Framework Convention on Climate Change (UNFCCC) 1992; United Nations Convention to Combat Desertification (UNCCD) 1996; Convention for Protection of World Cultural and Natural Heritage, 1975; Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1992); Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 2004; Stockholm Convention on Persistent Organic Pollutants POPs, 2004; The Convention on the Prevention of Marine Pollution from ships (MARPOL), 1973; Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972; The Montreal Protocol on substances that deplete the Ozone layer; Bamako convention on the Ban of the Import into Africa and the control of Transboundary Movements of Hazardous Wastes within Africa, 1990; The Kyoto Protocol to United Nations Framework on Climate Change, 2003; The Cartagena Protocol on Biosafety, 2003; FAO Compliance Agreement, 1993; FAO Port State Measures Agreement, 2016; International Convention for Regulation of Whaling (ICRW) 1946, FAO Code of Conduct for Responsible Fishing, 1995; ILO Fundamental Conventions (ie. Forced Labour Convention, 1930 (No. 29); Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87); Right to Organise and Collective Bargaining Convention, 1949 (No. 98); Equal Remuneration Convention, 1951 (No. 100); Abolition of Forced Labour Convention, 1957 (No. 105); Discrimination (Employment and Occupation) Convention, 1958 (No. 111); Minimum Age Convention, 1973 (No. 138); Worst Forms of Child Labour Convention, 1999 (No. 182)	All these international instruments were formulated with the main objective of conserving biodiversity and natural resources for present and future generations, as well as to ensure safe and healthy working conditions for all workers/personnel. AFDP interventions in seed development, fisheries, aquaculture and mariculture have a bearing on these international instruments as there is need to be observed during design and implementation phase.	Tanzania has ratified all these instruments
Regional		
Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean Region, 1996; Indian Ocean Tuna Commission (IOTC) Agreement; AUC- NEPAD Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (2014), African Convention on the conservation of Nature and Natural Resources, (Algiers Convention); Southern African Development Community (SADC) Protocol on Fisheries; Southern Indian Ocean Fisheries Agreement (SIOFA), Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (1996); Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, 1994.	All these regional instruments have a bearing to AFDP therefore will be adhered to during design and implementation	Tanzania has ratified all these regional instruments

3.3 IFAD Safeguard Polices

Policy on Improving Access to Land and Tenure Security, 2008

Secure access to productive land is critical to the millions of poor people living in rural areas and depending on agriculture, livestock or forests for their livelihood. It reduces their vulnerability to hunger and poverty; influences their capacity to invest in their productive activities and in the sustainable management of their resources; enhances their prospects for better livelihoods; and helps them develop more equitable relations with the rest of their society, thus contributing to justice, peace and sustainable development (IFAD, 2008).

The Fund's first strategic objective is to help "ensure that, at the national level, poor rural men and women have better and sustainable access to ... natural resources (land and water), which they are then able to manage efficiently and sustainably." Land access and tenure security issues are linked, directly or indirectly, to all the strategic areas of IFAD's interventions.

The IFAD Policy on Improving Access to Land and Tenure Security has been formulated to: (a) provide a conceptual framework for the relationship between land issues and rural poverty, acknowledging the complexity and dynamics of evolving rural realities; (b) identify the major implications of that relationship for IFAD's strategy and programme development and implementation; (c) articulate guiding principles for mainstreaming land issues in the Fund's main operational instruments and processes; and (d) provide the framework for the subsequent development of operational guidelines and decision tools. The policy acknowledges the complexity and dynamics of evolving rural realities and articulates guiding principles for mainstreaming land issues in the Fund's main operational instruments and processes. It also

In the policy, land refers to farmland, wetlands, pastures and forests. Land tenure refers to rules and norms and institutions that govern how, when and where people access land or are excluded from such access. Land tenure security refers to enforceable claims on land, with the level of enforcement ranging from national laws to local village rules, which again are supported by national regulatory frameworks. It refers to people's recognized ability to control and manage land – using it and disposing of its products as well as engaging in such transactions as the transferring or leasing of land.

The main principles of the policy are:

i. Align with national priorities and support to poverty reduction strategies;
ii. Adhere to the "do-no-harm" principle at all times;
iii. Appreciate the diversity and dynamic nature of existing agrarian structures and tenure systems;
iv. Support the centrality of the empowerment of poor rural people and the organizations that
v. represent them;
vi. Forge complementary partnerships with like-minded actors;
vii. Focus on the gender dimension of land rights;
viii. Adhere to the principle of free, prior and informed consent;
ix. Support to production services and market linkages to maximize the positive effects of access to land and tenure security.

Anchored in this policy are the tenets of Free Prior and Informed Consent (FPIC).

Environment and Natural Resources Policy, 2012

IFAD's Environment and Natural Resources Policy aims to enable poor rural people to escape from and remain out of poverty through more-productive and resilient livelihoods and ecosystems, by integrating the sustainable management of natural assets across its activities and its partners' activities.

The Policy sets out 10 core principles to guide its support, namely:

1. Scaled-up investment in multiple benefit approaches for sustainable agricultural intensification;
2. Recognition and greater awareness of the economic, social and cultural value of natural assets;
3. 'Climate-smart' approaches to rural development;
4. Greater attention to risk and resilience in order to manage environment- and natural-resource related shocks;
5. Engagement in value chains to drive green growth;
6. Improved governance of natural assets for poor rural people by strengthening land tenure and community-led empowerment;
7. Livelihood diversification to reduce vulnerability and build resilience for sustainable natural resource management;
8. Equality and empowerment for women and indigenous peoples in managing natural resources;
9. Increased access by poor rural communities to environment and climate finance; and
10. Environmental commitment through changing its own behaviour.

Social, Environment and Climate Assessment Procedures (SECAP), 2017

SECAP endeavours to ensure that IFAD's goal of enabling poor rural people to improve their food and nutrition security, increase their incomes and strengthen their resilience, particularly to climate change, is done in an environmentally and socially responsible manner. The procedures set the minimum standards for the assessment of social, environmental and climate change risks of IFAD projects which apply throughout the project cycle. The procedures aim to:

i. Analyse potential risks and provide information to strengthen the social, environmental and climate dimensions of programmes and projects;
ii. Maximize social, environmental and climate change adaptation and mitigation benefits, and avoid or minimize negative impacts; and
iii. Increase the consistency, transparency and accountability in decision-making concerning these dimensions of IFAD's results-based country strategic opportunities programmes (RB-COSOPs), country strategy notes (CSNs), and programmes and projects in a timely fashion.

SECAP provides a step-wise description of the processes and guidance to assess risk at each phase of a project or programme cycle, as follows:

- Step 1: Project Concept: environmental and social categorisation and criteria, climate risk classification, nature and sensitivity of project location, significance of impacts, cumulative and induced impacts;
- Step 2: Early Design: environmental and social impact assessment, climate risk analysis;
- Step 3: Late Design: Review of ESIA and Climate Risk Analysis reports and incorporation of recommendations into design;
- Step 4: Loan Negotiations: financing agreement, including clauses, covenants, and provisions for environmental, social and climate related actions;
- Step 5: Board Approval: final ESIA/ESMP report disclosed;

- Step 6: Project Implementation: implementation of social, environmental and climate adaptation/mitigation actions/measures contained in the ESIA/ESMP, RAP, IPP and other relevant loan covenants;
- Step 7: Project completion and ex-post ESIA: analysis of the impact of social, environmental and climate issues arising from project implementation.

Step 1 requires the screening of projects to allocate one of three categories:

- Category A projects may have significant adverse environmental and/or social implications that: (i) are sensitive, irreversible or unprecedented; (ii) affect an area broader than the sites or facilities subject to physical interventions; and (iii) are not readily remedied by preventive actions or mitigation measures. These projects require one or combination of a formal Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Framework (ESMF), Resettlement Action Framework (RAF)/ Resettlement Action Plan (RAP), free, prior and informed consent (FPIC)/FPIC implementation plan and Indigenous People Plan.
- Category B projects are those that may have some adverse environmental and/or social impacts on human populations or environmentally significant areas but the impacts are less adverse than those for Category A, are site-specific and few are-irreversible in nature, and can be readily remedied by appropriate preventive actions and/or mitigation measures. While no formal ESIA is required for Category B programmes/projects, in many cases further environmental analysis could be undertaken during project preparation or implementation. In some cases, an ESMF is developed during project preparation or implementation. Category B projects require an ESMP.
- Category C projects generally do not require additional environmental analysis because the activities have positive environmental impacts, or negligible or minimally adverse environmental impacts. They would include, for example, technical assistance grants for agricultural research and training, grants to generate global environmental impacts, research, capacity building and institutional strengthening.

As noted in Section 1.3, the AFDP has been categorised as Category A.

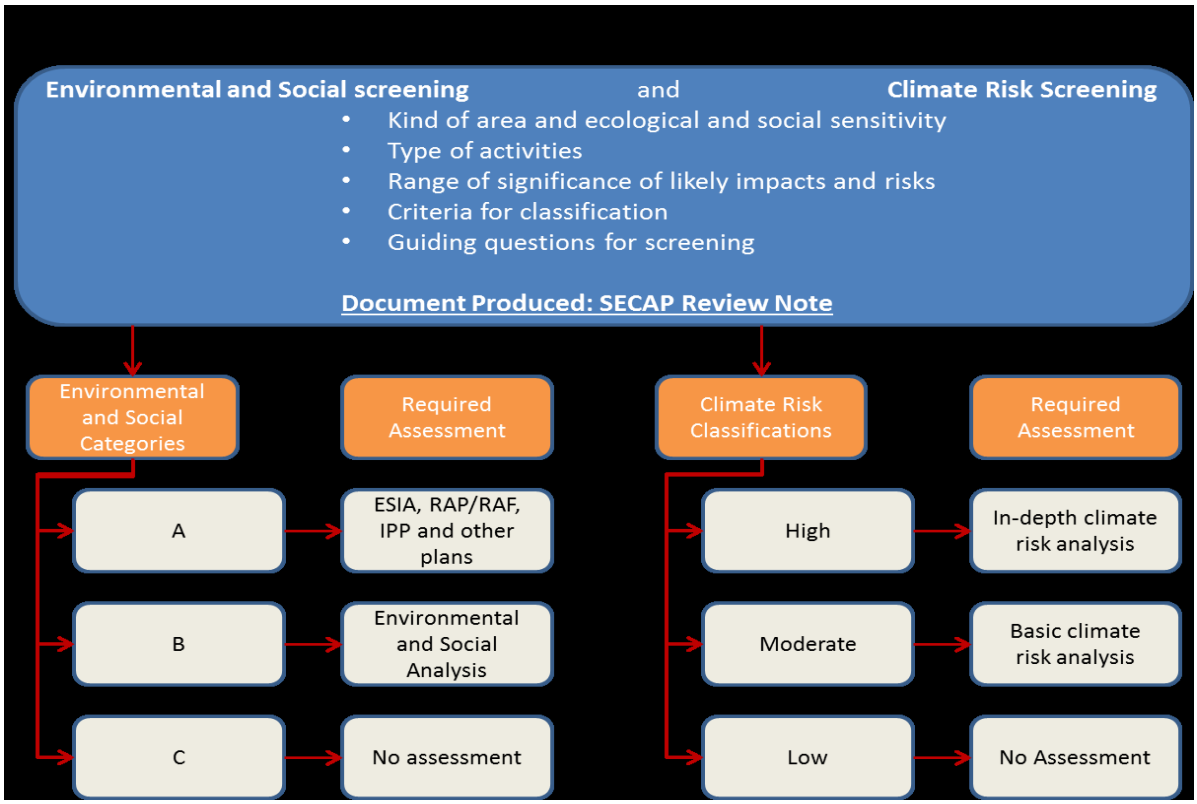
SECAP also provides for climate risk classification based on available information about historic climate hazard occurrences, current climate trends, and future climate change scenarios, as follows:

- High risk programmes or projects can be expected to be highly vulnerable to climate-related hazards and thus would benefit from an in-depth climate risk analysis as part of the design or initial implementation stage. This analysis should include an analysis of GHG emissions and present recommendations for risk management – for example, practical climate risk management measures that can be integrated into the project design and implementation phases and could be used to mobilize climate finance for the co-financing of targeted risk reduction and adaptation/mitigation measures.
- Moderate risk programmes or projects can be expected to be moderately sensitive to climate risks and thus requires a basic integration of climate issues to be undertaken during the project design phase. This process should result in practical adjustments under the project to reduce losses and damages from climate hazards to IFAD's client group and capitalize on opportunities to strengthen local risk-management capacities.
- Low risk programmes or projects are unlikely to be vulnerable to climate risks and thus voluntary measures could be incorporated into the detailed design and implementation phases based on the SECAP project assessment recommendations. These projects generally focus on investments which do not have a direct physical or geographical interface with climate hazards.

The programme is expected to be moderately sensitive to climate risks. SECAP therefore requires that climate adaptation and mitigation measures are integrated into the Programme's activities, namely enhanced production, distribution and utilisation of quality seeds as well as fisheries and aquaculture development. Chapter 8 of this ESMF presents a basic climate risk assessment.

Figure 3-1 below illustrates the screening process adopted by SECAP.

Figure 3-1: Social Environmental and Climate Screening Flow Diagram



Source: SECAP 2017

SECAP provides 14 Guidance Statements, namely: Biodiversity; **Agrochemicals**; Energy; **Fisheries and Aquaculture**; Forest Resources; Rangeland-based Livestock Production; **Water (Agricultural and Domestic Use)**; Dams, their Safety and SECAP; Physical Cultural Resources; Rural Roads; **Development of Value Chains, Microenterprises and Small Enterprises**; Rural Finance; Physical and Economic Resettlement; and **Community Health**. Those of particular relevance to AFDP are emboldened.

Where physical or economic displacement is envisaged affecting access and user rights to land and other resources, SECAP requires that Free, Prior and Informed Consent (FPIC) is obtained from the affected people, the stakeholder engagement and consultation process is documented, and a resettlement action plan (RAP) or resettlement action framework (RAF) is prepared. In the case of AFDP, agricultural interventions (crop seed development and aquaculture) will take place in semi-rural or rural areas without indigenous peoples or minorities, and will not affect land rights since these interventions involve agricultural technologies, production and value chain development on land belonging to the government or national institutions, or in the case of the aquaculture ponds, will be developed on request from farmers on their own land.

Strategy and Action Plan on Environment and Climate Change 2019-2025

The 2019-2025 Environment and Climate Change Strategy aligns with IFAD's Strategic Framework (2016-2025), responds to commitments to the Eleventh Replenishment of IFAD's Resources (IFAD11) and builds on Social, Environmental and Climate Assessment Procedures (SECAP) and the Adaptation for Smallholder Agriculture Programme (ASAP). Although IFAD has separate policies and strategies for environment and climate change, in practice, it has long addressed them in an integrated way, as have smallholders. The strategy is built around a conceptual framework that reflects IFAD's integrated practice and experience to date, draws on new scientific understanding of the links between climate and environment, including at the livelihood level, and takes into account recent policy developments, notably the Sustainable Development Goals (SDGs). By addressing environmental sustainability and climate resilience in a single strategy, and by incorporating social dimensions in the conceptual framework and where relevant in the strategic actions, the strategy provides the foundation for planned full integration of the environmental and social dimensions of rural development into IFAD's work.

The strategy therefore aims to guide the integration of environmental sustainability and climate resilience into IFAD's programming. It does this by:

- Summarizing the major accomplishments of IFAD's work on environment and climate integration to date, as well as its commitments going forward;
- Describing the changing context in which IFAD works – both within the organization and in its areas of implementation;
- Establishing a vision and conceptual framework for IFAD's approach to environment and climate change;
- Presenting a theory of change, including outcomes and strategic directions for
- the strategy period; and
- Providing an action plan and results management framework.

The main objective underlying this strategy is enhanced resilience of smallholder farmers and rural communities to environmental degradation and climate change impacts. This will ultimately provide the foundation for more prosperous livelihoods today and in the future. IFAD will contribute to meeting this objective through the following outcomes:

i. Governments are increasingly effective in integrating environment and climate change objectives and considerations into smallholder agriculture and other rural development policies and programmes.
ii. IFAD has the skills, capacity, partnerships, systems and resources needed to fully support governments in integrating environment and climate change into rural development policies and programmes.
iii. IFAD investments contribute to the generation of environmental assets and services, and global public goods that make the livelihoods of poor rural people more prosperous and resilient, and IFAD's own operations more environmentally sustainable.
iv. IFAD becomes a global leader in generating knowledge on managing sustainable rural livelihoods, enabling IFAD to play a greater advocacy role in supporting global efforts to build a healthy planet.

Gender Equality and Women's Empowerment Policy, 2012

IFAD's Gender Policy goal is to deepen the impact and strengthen the sustainability of IFAD- supported development initiatives, in order to increase IFAD's impact on gender equality and strengthen women's empowerment in poor rural areas. The Policy has three strategic objectives:

- Strategic objective 1: Promote economic empowerment to enable rural women and men to have equal opportunity to participate in, and benefit from, profitable economic activities.
- Strategic objective 2: Enable women and men to have equal voice and influence in rural institutions and organizations.
- Strategic objective 3: Achieve a more equitable balance in workloads and in the sharing of economic and social benefits between women and men.

To achieve these objectives, the Policy outlines five action areas aiming to:

i. Systematically address gender equality and women's empowerment issues in IFAD-supported country programmes and projects;
ii. Improve IFAD contributions to advocacy, partnerships and knowledge management on gender equality;
iii. Strengthen capacity of partners to address gender issues in agriculture and rural development;
iv. Develop corporate approaches and procedures with IFAD that support gender and diversity; and
v. Ensure IFAD's corporate human and financial resources, and monitoring and accountability systems fully support gender equality and women's empowerment.

Targeting Policy, 2008

IFAD's mandate defines its "target group" as rural people living in poverty and experiencing food insecurity in developing countries. Within this broad group, IFAD proactively strives to reach extremely poor people (as defined by SDG 1) who have the potential to take advantage of improved access to assets and opportunities for agricultural production and rural income-generating activities (SDG 2). IFAD's Targeting Policy focuses on improving livelihoods through: ensuring national and international resources are used effectively, policy support is dedicated to rural and agricultural development; encouraging local and national governments to focus on enabling the rural poor to improve their livelihoods; economically and socially empowering rural poor; and encouraging national ownership of interventions.

The Policy's guiding principles are to:

- Focus on rural people who are living in poverty and experiencing food insecurity, and who are able to take advantage of the opportunities to be offered;
- Expand outreach to proactively include those who have fewer assets and opportunities, in particular extremely poor people;
- Include marginalized groups, such as minorities and indigenous peoples, and address their specific needs;
- Address gender differences and have a special focus on women within all identified target groups – for reasons of equity, effectiveness and impact – with particular attention to women heads of household, who are often especially disadvantaged;
- Recognize that relative wealth or poverty can change rapidly due to external shocks and that this vulnerability needs to be addressed;
- Clearly identify at the programme or project design stage who the intended target groups are and why, and consistently apply these categories, during implementation, in monitoring and evaluation (internal and external) of targeting performance;
- Identify and work with like-minded partners at local, country, regional and international levels to develop a shared understanding of both the dynamics of rural poverty in different contexts and successful targeted approaches;
- Pilot and share learning on successful approaches to targeting hard-to-reach groups; and
- Build innovative and complementary partnerships with actors that can reach target groups that IFAD cannot reach with the instruments at its disposal.

Policy on Disclosure of Documents, 2010

IFAD's Policy on the Disclosure of Documents enables project design documents to be disclosed prior to the Executive Board session at which the project is to be considered. The Consultation also directed the Executive Board to review policy provisions with regard to the disclosure of previously undisclosed documents.

Under IFAD's current disclosure policy, the following documents are disclosed to the public at the same time that they are made available to Executive Board representatives and Governors:

- All documents submitted to the Governing Council (including its Replenishment Consultations);
- All documents submitted to the Executive Board (including the Evaluation Committee);
- Information/status notes on projects being developed for presentation to the Executive Board following internal approval of the inception memorandum;
- Agreements for loans and grants once they are signed and effective;
- Amendments to loan and grant agreements once signed and countersigned;
- Previously undisclosed documents that are eligible for disclosure under the current policy (upon request or as necessary)

All evaluation reports and documentation submitted to the Evaluation Committee are made available to the general public on the website of the IFAD Office of Evaluation (IOE), which is part of IFAD's corporate website. Project/programme design documents are disclosed to the public in their original language prior to the Executive Board session at which the project/programme is to be considered.

The policy also discusses the process for disclosure of previously undisclosed documents, the language of disclosure and appeals.

3.4 Comparison of GoT and IFAD Policy Requirements

A comparison of the Government of Tanzania policies and requirements and IFAD's policies are summarised in the Table 3-4 below.

Table 3-4: Comparison of Government of Tanzanian and IFAD Requirements

Requirement	Tanzanian Environmental and Social Requirements	IFAD SECAP and Other Policies
Environmental and Social Screening and Categorisation	The First Schedule of The Environmental Management (Environmental Impact Assessment and Audit)(Amendment) Regulations, 2018, lists activities/projects as Category A, B1 or B2. Detailed environmental and social impact assessments are mandatory for all projects falling into Category A, while those falling into Category B2 require only a Project Brief to be prepared. Projects falling into Category B1 are considered borderline, requiring further screening according to criteria described in the Second Schedule of the Regulations, based on which a decision will be made on its final categorisation. Interventions supported by the AFDP will fall into both Category A and Category B2.	SECAP assigns Category A to projects located in, or proximate to ecologically sensitive areas such as wetlands, national parks, buffer zones, coral reefs, mangroves swamps, small island ecosystems, areas of global/national biodiversity significance; large scale aquaculture or mariculture projects, or where their development involves significant alteration of ecologically sensitive area; projects that will require significant use of agrochemicals; water based development where it is believed that significant depletion and/or reduce flow may have occurred from the effects of climate change or from overutilization; risk of project-induced pollution on sensitive ecosystems; introduction of potentially invasive species or genetically modified organisms which may

Requirement	Tanzanian Environmental and Social Requirements	IFAD SECAP and Other Policies
		impact on local biodiversity; economic or physical displacement or physical resettlement of more than 20 people or impacting more than 10% of a community's or individual farmer's assets. For Category A projects a formal ESIA, RAP, IPMP, as applicable, are required with ESMP elaboration. Category B projects include; agricultural intensification and/or expansion of cropping area in "non-sensitive areas"; natural resources-based value chain development; artisanal fisheries where there is information on fish stocks, fishing effort and sustainable yield; small-scale aquaculture and mariculture which do not involve significant alteration of wetlands, ecologically sensitive areas and changes in hydrology; natural resources-based value chain development; small and microenterprise development subprojects, including artisanal production; projects involving the development of an agro-processing facility; project activities that may have minor adverse impact on physical cultural resources; economic and physical displacement affecting fewer than 20 people or impacting less than 20 per cent of any one community's or individual farmer's or household's assets; and projects requiring a migrant workforce for construction or seasonal workers for construction, planting and harvesting. Category B projects do not require formal ESIA, but in many cases further environmental analysis is requested during project preparation or implementation in the form of an ESMP which may be a stand-alone document or an output from environmental analysis.
Climate Risk Classification	NEMC's environment procedures list climate as an aspect to be considered as potentially affecting projects. Tanzanian and Zanzibar environmental legislations contain no risk classifications as such. Environment Management Act (2004) notes the importance of climate change and the need for adaptation, and requires the Government to put in place strategies and actions to address it in the context of the United Nations Framework Convention on Climate Change (UNFCCC), and its related Protocol(s). The National Climate Change Strategy (2012) and the Zanzibar Climate Change Strategy (2014) comprehensively elaborate adaptation and mitigation actions. In 2015, the URT submitted its new climate action plan to the UNFCCC.	SECAP provides a Climate Risk Classification methodology which specifies that projects that have high vulnerability to climate risk are for example: projects that establish infrastructure in areas with a track record of extreme weather events; and projects in areas in which rural development projects have experienced weather-related losses and damages in the past. IFAD requires that projects classified as high risk undertake an in-depth climate risk analysis. Examples of moderate risk projects include projects that make use of climate-sensitive resources, but do not focus on these resources as a main commodity; projects which invest in infrastructure not directly exposed to extreme weather events but have potential to become more resilient through adaptation of green technologies; and projects which focus on institutional development and capacity building for rural institutions in climatically heterogeneous areas, where opportunities exist to strengthen indigenous climate risk management capabilities. Low risk projects are

Requirement	Tanzanian Environmental and Social Requirements	IFAD SECAP and Other Policies
		those that are not likely to be vulnerable to climate risks (eg. development of a micro-finance institution). Projects under AFDP are therefore considered to lie within the moderate climate risk category.
Consultations and FPIC	The EIA Regulations (2018) require consultations with key stakeholders at National, District and local level, as well as with the affected communities, and their participation, during the entire EIA process. Concerns and inputs expressed by the interested and affected groups are to be reflected in the EIS. However, there is no provision for free, prior and informed consent.	SECAP emphasises the need for greater consultation by communities (especially the marginalized poor) and stakeholders that are likely to be affected by IFAD's operations during the respective programme/project cycle, in order to provide input to the project design, receive feedback on the draft ESIA report, ensure broad community support to the project, and to ensure that affected people endorse the proposed mitigation/ risk reduction and management measures. In addition to public consultations, SECAP requires FPIC for all projects that are likely to affect land or user rights to land, whether or not the affected people belong to historically underserved groups or minorities. Since AFDP will not affect land or user rights to underserved groups or minorities, FPIC need not be applied for AFDP interventions.
Compensation and Resettlement	With regard to compensation and resettlement issues, the main pieces of legislation are the Constitution of United Republic of Tanzania, the Land Policy and the Land Acts, as well as supporting local laws and bylaws. Both the Land Act (1999) and The Land Regulations (2001) address compensation as a requirement in the acquisition of land owned by people. Compensation under Section 156 of the Land Act No. 4 of 1999 applies to non-governmental corporate bodies, institutions or groups of persons. This Section requires compensation to be paid to any person for the use of land of which he / she is in lawful or actual occupation, as a communal right of way and with respect to a way leave. These include any damage suffered in respect of trees, crops, and buildings as result of creation of way leave; and damage due to surveying or determining the route of that way leave. The act provides for full, fair prompt compensation to any person whose right of occupancy or recognized long standing occupation or customary use of land is revoked or otherwise interfered with to their detriment. National legislation states that 'expropriation of land will be done when deemed necessary for public purposes'. It also entitles only those who are 'landholders' with legal possession of the land and who own property thereon. Furthermore, the law provides property must be handed over 180 days after compensation has been paid.	IFAD's Policy on Improving Access to Land Tenure Security stresses the need for Free Prior Informed Consent and the "Do no Harm" Principles. These principles are also reflected in other IFAD policies including the Targeting Policy, Engagement with Indigenous Peoples Policy and Gender Equality and Women's Empowerment Policy. The core tenets of IFAD's principles on compensation and resettlement are that wherever possible, any physical or economic resettlement that could negatively impact affected people should be avoided or minimised; that all land and natural resource users with a legitimate claim will be recognised including people having informal/customary rights; and that no affected person should be left worse off, and preferably in a better position through proper and timely compensation and other mitigation measures.

Requirement	Tanzanian Environmental and Social Requirements	IFAD SECAP and Other Policies
	AFDP will not support subprojects resulting in any physical or economic displacement. Land to be acquired for demonstration plots, workshops and stores/sheds will be located on Government and/or institutional land, which will be selected provided no economic or physical displacement will take place.	
Grievance Redress Mechanisms	There is no distinct policy or law providing for grievance redress for any complaints that may arise out of non-compliance of environmental or social actions provided in the ESIA/Project Brief. However, grievance redress mechanisms exist at ward levels for dispute resolution for civil cases. For criminal cases, the police are required to intervene. Should disputes not be resolved at these levels, then the matter is taken to the district magistrate's and high courts. This system can be adopted for AFDP.	IFAD has developed a Complaints Procedure for "Alleged Non-Compliance with its Social and Environmental Policies and Mandatory Aspects of Its Social Environmental and Climate Assessment Procedures". Parties adversely or potentially adversely affected by IFAD-funded projects and programmes may bring issues to the Fund's attention using SECAPcomplaints@ifad.org. Complaints must be put forward by at least two people who are both nationals of the country concerned and/or living in the project area. Complaints from foreign locations or anonymous complaints will not be taken into account. Complaints must concern projects/programmes currently under design or implementation. Complaints concerning closed projects, or those that are more than 95 per cent disbursed, will not be considered. IFAD does not provide monetary compensation to resolve complaints. The IFAD website provides a clear summary of the steps involved and guidance on how to report issues.
Biodiversity	The Environment Management Act 2004 addresses issues of management and conservation of biological diversity. Various environment legislations exist that apply to the conservation of biological diversity, for example, for wildlife conservation, forests and national parks, water resources, etc. The National Biodiversity Strategy and Action Plan NBSAPII (2015-2020) addresses the key concerns regarding biodiversity management in Tanzania. These include, among others, agricultural expansion and urban growth; overexploitation; pollution; invasive alien species; exploration and extraction of oil and gas; climate change; genetic erosion; poverty; the need for economic growth; political and social instability in neighbouring; countries; culture and beliefs; inadequate awareness and knowledge; and inadequate policy, legal and institutional response.	IFAD recognises that value chain development projects may offer opportunities for preserving biodiversity by promoting the sustainable harvesting and marketing of products derived from old plant varieties and breeds (e.g. underutilized species), locally used plants (e.g. medicinal plants) and non-timber forest products. IFAD does not implement projects in areas of critical habitats[1] or which result in conversion or degradation of such habitats. It emphasises the need to identify alternatives and ensure that any potential degradation or conversion is appropriately mitigated. IFAD supported projects are therefore required to protect biodiversity through appropriate design and full community participation.

[1] A "critical habitat" is identified based on five criteria that address habitat of significant importance to threatened, endemic, congregatory and migratory species, threatened or unique ecosystems, and key evolutionary processes (IFC (2019); Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources).

Requirement	Tanzanian Environmental and Social Requirements	IFAD SECAP and Other Policies
Physical Cultural Resources	in Tanzania Mainland, the Antiquities Act of Tanzania, enacted in 1964 (amended in 1979 and 1985) provides for management, protection, and preservation of movable and immovable tangible cultural heritage resources. The Department of Antiquities at the Ministry of Natural Resources and Tourism is responsible for identification and documenting information related to all know cultural heritage sites in Tanzania. Upon identification of new sites the minister may by notice of government gazette aquire the area and declare it to be conserved area. In Zanzibar, The Conservation and Development Authority Act of 2010 provides for protection of cultural resources in Zanzibar town.	In cases where physical cultural resources are found, IFAD assists borrowers in avoiding, minimising or mitigating adverse impacts on PCR in the development programmes/ projects that it finances. Due diligence is carried out through applying SECAP to ensure that PCR are properly identified and adequately addressed and that any measures to protect PCR comply with the borrower's national legislation as well as with its obligations under relevant international treaties and agreements. SECAP prescribes general steps for programmes/ projects that apply in cases involving PCR: screening; collecting data; assessing impacts; and formulating mitigating measures.
Public Disclosure	The Government of Tanzania does not have public disclosure policy. However, the EIA Regulations (2018) provides for NEMC to call for a public hearing and public review of the EIS.	IFAD's Policy on the Disclosure of Documents (2010) requires full disclosure to the public, and includes information notes on projects being developed for Board presentation, agreements for approved loans and grants, and project/programme design documents which include ESIAs, ESMFs, RAPs and RAFs.

The key differences between GoT and IFAD policies and requirements are the GoT framework does not specifically provide climate risk categorisation or FPIC; and there are differences in regard to entitlement and procedures for compensation and resettlement and livelihood restoration where physical and economic displacement may occur.

4 Lessons Learnt

4.1 Lessons from IFAD-Supported Projects

Marketing Infrastructure, Value Addition and Rural Finance Support Programme (MIRVAF) and Rural Micro, Small and Medium Enterprise Support Programme (MUVI)

In Tanzania, the use of improved seeds (especially maize hybrids) has increased dramatically since 2008, primarily pushed by the national agricultural input voucher scheme (NAIVS/AFSP, 2008-13), targeted on maize and rice in the high potential highland areas, while more vulnerable agro-ecological zones and companion crops remained neglected. IFAD projects in Tanzania (MIRVAF and MUVI) supported to the introduction of Quality Declared Seeds (QDS) approach for sunflower, beans and sesame contributed to increasing the awareness of farmers on the availability of quality and affordable seeds and planting materials. Despite all of these efforts, a sustainable and reliable supply chain for quality seed has not emerged. However, multiplication and use of improved varieties remains low (lack of Early Generation Seeds) and volumes tend to be low and supply dwindles in the absence of project funding. Despite support provided over more than 20 years, this has not addressed systemic and structural challenges of seed supply. AFDP design builds on lessons learned from MIRVAF and MUVI. It also builds on IFAD's global and extensive experience in promoting pro-poor agricultural value chains. AFDP adopts an inclusive agricultural value chain approach that, beyond productivity and production, invests in linking smallholder producers to more profitable markets, and building their capacities to graduate from artisanal fishing and subsistence farming to semi-subsistence/semi-commercial status, practicing farming as a business.

Artisanal Fisheries Promotion Project (ProPESCA)

This Project entered began in March 2011 and completed in March 2019. Its goal was to improve incomes and livelihoods of poor households involved in artisanal fisheries in the selected growth poles in coastal areas of Mozambique. The development objective purposed to increase the returns from fish sales for artisanal fishers and small-scale operators engaged in both capture fisheries and aquaculture on a sustainable basis. The project approach was based on the following key principles or pillars: (i) diversification in artisanal fisheries, (ii) development of the value chain for higher value fish, (iii) focus on growth poles, (iv) promoting social and spatial inclusion, and (v) facilitating the development of sustainable financial services. The combination of capacity building activities for fishers, traders, processors in capture, handling, processing, and conservation and the improved access to fishing inputs (eg. ice, electricity, better access roads, etc.) contributed to improved fisheries productivity (more catch and reduced waste) and increased incomes. ProPESCA has cumulatively achieved some notable results and outputs in key interventions in fish value chain, financial services, improved nutrition and connectivity (access roads and electricity). Fish production and catch levels increased, reduction in post-harvest losses as a result of introduction of improved fish handling, preservation and processing facilities and techniques, as well as increased incomes to fish traders. ProPESCA has enhanced women's access, in general, and young women in particular, to markets, finance and other key services, including infrastructure that are key to their improved livelihoods and economic empowerment. Presence of youth is found along links of the fish value chain: young fishermen, traders, mechanics, boat carpenters. The improved fishing gears, technologies and sensitization on good NRM have contributed to reduce pressure on coastal ecosystems (i.e. mangroves). This is a positive factor to mitigate adverse impacts (i.e. coastal erosion or sea level rise) which are exacerbated by climatic changes.

4.2 Lessons from other Development Partner Projects

Agriculture Sector Development Programme I

Thinly spread resources result in fragmented impact that is hard to measure. ASDP I faced implementation challenges and generated limited impact due to the scale and complexity of implementing a new programme nationally. An analysis of the World Bank portfolio in Tanzania shows that the most effective programs were generally specific, large investments or interventions, geographically targeted, backed with sound analytics, and supported by robust systems for quality assurance and quality control. AFDP investments will be: (i) programmatically focused on the two ASDP II priority areas; (ii) thematically targeted to the crop seeds and fish value chains, and (iii) geographically focused in the arid and semi-arid lands in central, western and lake zones areas, which are particularly vulnerable to CC and where pockets of food insecurity persist.

Mainstreaming business approach to agriculture. An evaluation of ASDP I showed that agriculture value chains are underdeveloped and fragmented. AFDP will contribute in bridging the gap between agricultural production and marketing, with a focus on business innovations benefiting women and youth along the value chain.

South West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFISH)

SWIOFISH is a six-year (June 2015-September 2021) World Bank financed regional Project, which aims at improving the management effectiveness of selected priority fisheries at regional, national, and community levels. The project covers Tanzania, Mozambique, and Comoros. In Tanzania, SWIOFish project focuses on priority fisheries and is jointly implemented by MLF, MANRLF, and DSFA. The selected priority fisheries in Tanzania are Tuna and tuna-like species (eg, swordfish, kawakawa, skipjack, shark), prawns, reef fish, small and medium pelagic species, aquaculture/mariculture (including seaweed) associated with the coast, and Octopus. After four years of implementation, the project has attained the following significant results: i) general decline in blast fishing; ii) ratification of the Port State Measures Agreement (PSMA)[2] in November 2019; iii) Increased controlled fishing activities via vessel registration and fishers license; iv) Developed standards for Small Pelagic; v) Increased knowledge and adherence to sustainable marine fisheries including 3 Fisheries Management Plans (Reef fish, Small Pelagics, and Octopus) implemented in 50 villages; vi) formalization of 32 BMU by way of registration; vii) Increased fish catch (species and size) due to decline of blast fishing activities or use of unauthorized fishing gears; and viii) Increased revenue generated from fisheries resources as a result of using BMU in collection at LGA level. Despite significant achievements, the project encountered the following challenges: delay in procurement of goods and services as well as delay in commencement of research projects. Research activities include stock assessment (biometrics, catch per unit effort, spatial and temporal distribution, population structure), impact of closures on fisheries, determining biomass and maximum sustainable yield, determining by-catch species. Preliminary assessment of project impacts reveals that (i) temporary closures are an effective management tool for sustainable fisheries since biomass and catch rates for the closed sites are higher compared to open areas; (ii) fishers are generally happy with closures (reef closures in the case of octopus) since they get more during opening season; (iii) better community governance and coordination with buyers is needed during reef opening period in order to avoid spoilage of the high harvest (due to inadequate uptake by buyers) and reduce concentrated fishing pressure at certain sites; and (iv) by-catch continues

[2] PSMA is a binding international agreement that targets illegal, unreported and unregulated (IUU) fishing and its objective is to prevent and deter IUU fishing by prohibiting vessels engaged in IUU fishing from using ports and landing their catches. This milestone will contribute to more sustainable management of fisheries in the South West Indian Ocean region.

to be an issue that would require management, especially if Tanzania proceeds to certify its fisheries products.

AFDP will capitalize on the achievements, physical assets and collaborative management approaches of coastal resources in both mainland and Zanzibar. In addition, the programme will build upon the findings of the different studies financed by SWIOFISH, particularly the results and recommendations from the analysis of stock structure and genetic connectivity of tuna and tuna-like species in Tanzanian EEZ and Territorial and research on oceanographic factors influencing distribution of tuna and tuna-like species in the Tanzanian waters.

Sustainable Fisheries Livelihoods Programme (SFLP)

The Sustainable Fisheries Livelihoods Programme (SFLP: 1999 – 2007) was a partnership between the Food and Agriculture Organization of the United Nations (FAO), the Department for International Development of the United Kingdom of Great Britain and Northern Ireland (DFID) and 25 participating countries in West and Western Central Africa. SFLP aimed to contribute to reducing poverty in coastal and riparian communities by improving the livelihoods of people dependent on fishery and aquatic resources.

An important lesson from the SFLP was the affirmation of the value of applying new working methods to address the issues relating to the promotion of responsible fisheries and poverty reduction in fishing communities. Many consider these to have opposing objectives. Thus many approaches to fisheries management sought to control access or reduce effort, potentially marginalizing or excluding the poor from access to resources. Conversely an aim to increase incomes of fishing communities through increased exploitation of resources can threaten sustainability. The SFLP approach attempted to challenge this assumption, essentially by proposing that poverty needs to be addressed through a wider perspective than that of resource exploitation alone. Addressing poverty is not necessarily about increasing incomes through increasing fish catches, but about understanding and dealing with vulnerability, and exploring wider livelihood options, in and outside the sector. It is also about improving access to services to reduce vulnerability and ensuring the inclusion of stakeholders and marginalised groups in institutional processes. Applying this perspective, experience within 25 West and Central African countries has shown that not only it is possible to reconcile poverty reduction and responsible fishing together, but it is necessary to tackle them both for the long term sustainability of fisheries livelihoods. AFDP will promote sustainable fisheries management for improved livelihoods of coastal fishing communities in Zanzibar and Mainland Tanzania, recognising the need to ensure participation by vulnerable groups and poor producer households that are engaged in fisheries activities.

5 Environmental and Social Overview

This section provides an overview of the environmental and social setting in the intervention areas and, unless otherwise referenced, is drawn mainly from the Third Report on the State of the Environment Report 2019 (SoER3)[3] and the Tanzania Water Resources Atlas (2019)[4]. It will be noted that the subproject ESIAs and Project Briefs will provide more focussed environmental and social baselines pertaining to the subproject/intervention areas.

5.1 Administrative Structure

The administrative structure of Tanzania Mainland as per is organized such that there is the Central government and local government authorities. The Central Government encompasses Ministries, Independent Departments and Executive Agencies while the local government entails regional secretariats followed by District Councils. Under the district level of administration there are Wards, followed by Villages/Streets. In some instances, there are Sub-villages (Kitongoji) below the Village level. The Ministry of Regional Administration and Local Government (MRALG) oversees regional administration by coordinating rural and urban development policies and strategies as well as the activities of Regional Secretariats.

There is a similar administrative structure in Zanzibar although each side of the Union has their own legislations governing these matters. Further, all matters to do with regional administration and local government in Zanzibar is under the Ministry of Regional Administration, Local Government and Special Departments (MRALGSD-ZNZ).

AFDP will be implemented at various levels: Ministry departments, Agencies and District Councils. The Prime Minister's Office will play a coordination role and will host the Project Coordination Unit. The institutional responsibilities of each implementing agency or department have been summarised in Section 2.4. However, these will be described in detail for all levels in the Programme Design Report and Programme Implementation Manual.

5.2 Physical Environment

5.2.1 Climate, Rainfall and Temperature

The climate of Tanzania is characterized by bimodal and unimodal rainfall regimes. The northern part of the country including areas around Lake Victoria Basin (Mwanza, Kagera, Mara, Shinyanga, Geita and Simiyu), North-Eastern Highlands (Kilimanjaro, Arusha and Manyara) and the Northern Coast (Dar es Salaam, Tanga and Northern Morogoro) experience two main rain seasons (bimodal) namely, long rains (Masika) which normally begins in mid-March and end at the ends of May and short rains (Vuli), which begins in mid-October and continues to early December. The Central part of the country (Dodoma and Singida), the Southern part (Ruvuma, Lindi and Mtwara), the Western areas (Kigoma, Tabora, Katavi and Rukwa) and South-western Highlands (Mbeya, Njombe, Iringa and Southern Morogoro) have a prolonged unimodal rainfall regime that start in November and continues to the end of April. These rain seasons are associated with the southwards and northwards movement of the Inter-tropical Convergence Zone (ITCZ).

[3] URT (2019). State of the Environment Report. VPO.
[4] URT (2019). Tanzania Water Resources Atlas. Ministry of Water.

Tanzania's topographical diversity gives rise to four distinct climate zones namely: 1) hot and humid coastal belt including the Zanzibar archipelago, which has the warmest temperatures, averaging 27–30°C, and receives 750–1,250 mm of annual rainfall, with Zanzibar receiving 1,400-2,000 mm; 2) hot and arid central plateau, which receives just 500 mm of rainfall; 3) cooler semi-temperate high lakes region in the north and west which receives 750–1,250 mm of rainfall annually; and 4) highlands of the northeast (i.e., Kilimanjaro) and southwest including the coldest parts of the country with average temperatures of 20–23°C[5].

Along the coast and in the off-shore islands the average temperatures ranges between 27°C and 29°C, while in the central, northern and western parts temperatures range between 20°C and 30°C. Temperatures are higher between the months of December and March and coolest during the months of June and July. In the Southern highlands and mountainous areas of the north and northeast, temperature occasionally drops below 15°C at night, and in the cold months on June and July sub-zero temperatures can also be experienced.

Increasing temperatures, longer dry spells and more frequent and intense rains put crop and livestock production in Tanzania at risk. The agricultural sector makes up about 25 % of GDP and employs 75–80% of the population. About 80% of agricultural production comes from rainfed, low-input smallholder farms highly vulnerable to weather variability. One third of crop land (roughly 4 million hectares) is devoted to maize, which accounts for 40% of caloric intake nationally. While increasing temperatures may benefit rainfed maize in the highlands, national production is projected to decrease 8–13% by 2050 due to increased heat stress, drying, erosion and flood damage[6].

5.2.2 Landscapes

Tanzania's major landscapes comprise:

i. Coastal Plains that extend along the coastline of Tanzania Mainland for about 800 km long from the border with Kenya in the north, to the border with Mozambique in the South;
ii. Plateaux in the central area of the country (includes the national capital, Dodoma), and is part of the East African Plateau that ranges between 1,000 and 1,500 meters above sea level (masl);
iii. Highlands and mountains that include the Usambara and Pare Mountain ranges, widely known as the Eastern Arc Mountains; Southern Highlands, which include the Livingstone, Kipengere, Udzungwa and Uluguru Mountain ranges; Mt Meru (4,565 masl) and Mt Kilimanjaro (5,895 masl), the highest point in Africa;
iv. The Great East African Rift Valley composed of two branches namely; the eastern branch that runs eastward through central Tanzania and includes Lake Natron, Manyara and Eyasi; and the western branch that includes Lake Nyasa, Rukwa and Tanganyika. (VPO, 2015)

5.2.3 Water Resources

Tanzania is divided into five major drainage systems: the Indian Ocean Drainage System; the Internal Drainage of Lakes Eyasi, Natron and Bubu Depression Complex; the Internal Drainage of Lake Rukwa; the Atlantic Ocean Drainage; and the Mediterranean Sea Drainage System. These systems have been further divided into nine river and lake basins: Pangani Basin, Wami/Ruvu Basin, Rufiji Basin, Ruvuma and the Southern Coast Basin, Lake Nyasa Basin, the Internal Drainage Basins of Lake Eyasi, Manyara and Bubu depression, Lake Rukwa Basin, Lake Tanganyika Basin, and Lake Victoria Basin. The Programme regions fall into five of these basins, namely: Pangani, Wami/Ruvu, Internal Drainage Basin, Lake Victoria and Lake Tanganyika. These are shown in Figure 5-1 below. The main rivers in the country are the Pangani, Rufiji, Wami, Great Ruaha, Malagarasi, Ruvu, Bubu, Mara, Ruvuma Rivers.

[5] USAID (2018). Climate Risk Profile: Tanzania
[6] Ibid.

Figure 5-1: Drainage Basins

Source: URT, Ministry of Water, Water Resources Division.

Current annual renewable surface water and ground water resources for the entire Tanzania mainland is estimated as 125,763 MCM of which 104,568 MCM is surface runoff and 21,195 MCM ground water recharge. At basin scale, Rufiji Basin has got the largest renewable surface and ground water resources, while Wami/Ruvu Basin has the smallest. Based on water stress index, Internal Drainage Basin and Wami/Ruvu Basin are experiencing water scarcity and absolute water scarcity, respectively. This index in 2019 stands at 2,250 m3/capita/year for the entire Tanzania mainland. The table below shows basin wise renewable water availability in Tanzania Mainland.

Table 5-1: Basin-wise Renewable Water Availability in Tanzania Mainland

Basin	Renewable Water Availability (MCM/year)		Total Water Availability (MCM/year)
	Runoff	Groundwater recharge	

Internal Drainage	6,084	884	6,968
Lake Nyasa	12,775	107	12,882
Lake Rukwa	9,288	2,137	11,425
Lake Tanganyika	10,641	2,755	13,396
Lake Victoria	11,700	1,327	13,027
Pangani	7,383	587	7,970
Rufiji	31,000	9,021	40,021
Ruvuma and Southern Coast	11,709	3,238	14,947
Wami/Ruvu	3,988	1,139	5,127
TOTAL	**104,568**	**21,195**	**125,763**

Source: Tanzania Water Resources Atlas (2019)

* Water Basins within the AFDP area are shaded.

While future river flows will be highly influenced by nonclimate factors such as changes in land use, climate projections indicate increased runoff for the Pangani and Rufiji Basins, which will increase risk of flooding and sedimentation, and decreased runoff for Wami/Ruvu basin, which will increase water stress in Dar es Salaam, Morogoro, Kibaha and Dodoma (with a combined population of more than 6 million). Water availability will also depend on the development of rivers upstream by neighboring countries, as 13% of Tanzania's renewable water resources are transboundary[7].

Ground water potential in the country is variable. However, it is one of the major sources of water, particularly in the semi-arid zones. About 75 % of the country is underlain by the Pre-Cambrian Basement Complex which is hard, consolidated and occasionally metamorphosed. Secondarily developed features of the Basement Complex, such as weathered zones, joints, fractures, faults and dykes allow borehole development and yield ranges up to 3 l/s[8]. Regions that are considered within arid and semi-arid zones are Dodoma, Singida, Tabora, Shinyanga and parts of Geita. As seen from the table above, some of the AFDP areas where crop seed development is proposed are considered water stressed, and therefore adoption of conservation agriculture methods, measures to ensure efficient water use and conformity with permitted abstraction limits will be important for the sustainability of these interventions.

5.2.4 Soils

There are six main types of soil types in the country and some 30 soil groups. Volcanic soils are found in the northern highland regions. Sandy soils are found predominantly in the coastal regions and used mainly for grazing. The Northern regions of Mwanza and Tabora have mainly granite/gneiss soils while red soils dominate the Central Plateau, including the Dodoma Region. Ironstone soils are found in the western Regions including Kagera and Kigoma. Mbuga black soils are vertisols that are spread across most of the country.

5.3 Biological Environment

5.3.1 Terrestrial Ecosystems

Terrestrial ecosystems include forests, mountains, drylands, savannah and agricultural lands, all of which is covered by various vegetation. Tanzania vegetation ranges from grasses to shrubs, miombo woodland and montane to rich forests that contain more than 2,000 plant species. The most typical vegetation is the dry grassland scattered with thorny scrub and acacia that is found along the Eastern

[7] USAID (2018). Op. Cit.

[8] URT (2005). National Water Sector Development Strategy – 2006 to 2015; Ministry of Water, Dar Es Salaam.

Plateau, which makes up most of the country's land area. This area includes open grasslands, savanna as well as woodlands and comprises the Serengeti Plains.

The total forest area is about 48.1 million ha with three major types of natural forests: i) miombo woodlands, ii) montane forests and ii) mangroves. The country has more than 20 million ha in the miombo ecosystem - a belt of miombo woodland stretches in southern and western Tanzania and is characterised by brachystegia, acacia and baobab trees. Tanzania's montane forests cover some 2 million ha, most of which is located in the Eastern Arc Mountains, forming an unbroken range between 50 and 200km inland. Mangrove forests (along the coastal belt from Mtwara region to Tanga Region covers more than 115,000 ha of land stretching over more than 800 km. In Zanzibar the coral rag forests of Jozani and Ngezi are under formal protection.

5.3.2 Coastal and Marine ecosystems

Tanzania has a territorial sea of 64,000 km2 (6.4 million ha), an Exclusive Economic Zone (EEZ) covering an area of about 223,000 km2 (22.3 million ha) and a coastline of about 1,424 km. Coastal and marine ecosystems occupy an area of 241,500 km2 or about 20% of the total land area of the country. The coastline is characterized by diverse coastal and marine ecosystems such as coral reefs, sea grass beds, mangroves, sandy beaches, rocky shores, numerous islets and terrestrial coastal forests which offer a diverse of ecosystem goods and services to the communities. All mangroves areas are gazetted, and cover 115,500 ha on Tanzania mainland and 18,000 ha on Zanzibar. A wide range of important and valued species are found along the coast, including an estimated 150 species of corals in 13 families; 8,000 species of invertebrates; 1,000 species of fish; 5 species of marine turtles, 428 species of seaweeds and 44 species of marine birds. Coral reefs present one of the most productive and biologically diverse marine ecosystems hosting over 500 species of fish and other invertebrates, making them an important fisheries resource supporting about 90% of artisanal marine fisheries covering about 3,580 km2[9].

5.3.3 Tanzania's Exclusive Economic Zone

An exclusive economic zone (EEZ) is an area which is beyond, and is adjacent to, a given country's territorial seas, and extends no more than 200 nautical miles (370 km) out from a country's own coastlines. The United Republic of Tanzania EEZ covers over 240,000 km2 and a coastline of about 800 km. The EEZ has economic importance as, in addition to setting boundaries, it is also supports livelihoods derived from fisheries, natural gas reserves and tourism.

The marine fisheries are conducted within territorial waters, which extend up to 12 miles, and in the EEZ. Almost all of the activities takes place in water depths of less than 500 metres and within 40 miles from the coast. The coastline has a length of 1,424 km, with almost all coastal communities engaged in fishing to some extent. Main commercial marine species are sardine, tuna and Tuna-like species, which together forms 30-50% of the total fish landing. Other fish species being landed include:- Emperors/Scavenger (Changu), Snappers (Fuatundu), Parrotfish (Pono), Carangidae (Kolekole), Rabbit fish (Tasi), Tuna (Jodari), Kingfish (Nguru), Mackerel (Vibua), Sharks (Papa), Rays (Taa), Lobster (Kamba kochi), shrimps (Kamba miti), Sardines (Dagaa) and Octopus)Pweza).

5.3.4 Protected Areas

Tanzania has a total of 17 gazetted national parks which comprise a total area of 61,950 km2. These include: Arusha National Park, Gombe Stream National Park, Katavi National Park, Kilimanjaro

[9] URT (2015). National Biodiversity Strategy and Action Plan 2015-2020, Vice Presidents Office Division of Environment, Dar es Salaam. Available at: http://tawiri.or.tz/wp-content/uploads/2017/08/national-biodiversity-strategy-and-action-plan-2015-2020.pdf

National Park, Kitulo National Park, Lake Manyara National Park, Mahale National Park, Mikumi National Park, Mkomazi National Park, Ruaha National Park, Rubondo Island National Park, Saadani National Park, Saanane Island National Park, Serengeti National Park, Tarangire National Park and Udzungwa Mountains National Park. In addition, the country has 28 game reserves covering an area of 117,755.4 km2. Game reserves are wildlife protected areas which are declared for the purpose of conservation. Consumptive and non-consumptive wildlife utilization is allowed after obtaining permits. These game reserves are famously known in Africa as areas for variety of activities. Selous is the largest game reserve covering an area of 50,000 km2 which is about 42.5% of the total area under game reserves. The remaining game reserves individually constitute less than 10% of the total game reserve area. Unguja Island has five protected areas: Jozani Chwaka Bay National Park, Ngezi Forest Reserve and Kiwengwa/Pongwe Forest Reserve, Masingini Foret Reserve and Jambiani Forest Reserve, while Pemba has four: Ngezi-Vumawinbi Nature Reserve, Msitu Mkuu Forest Reserve and Ras Kiuyu Proposed Forest Reserve [10], [11].

The URT has a total territorial sea of approximately 61,000 km2[12], of which Mainland Tanzania has gazetted Marine Protected Areas (MPAs) totalling 2,173 km2. These areas include three (3) Marine Parks and fifteen (15) Marine Reserves. Zanzibar has six marine conservation areas (MCAs) covering approximately 2,1000 km2, namely: Menai Bay Conservation Area, Mnemba-Chwaka Bay, Pemba Channel Conservation Area, Chumbe Island Coral Park Sanctuary, Tumbatu Marine Conservation Area and Changuu-Bawe Islands Marine Conservation Area[13]. In addition, the Pemba Channel Conservation Area lies along the length of the west coast of Pemba Island. AFDP will not support any activities/interventions in the marine parks. Artisanal fishers and seaweed farming will be undertaken in marine conservation areas which are used and managed by the local communities.

5.3.5 Fisheries

Freshwater fisheries account for 85% of the total country's fish production, while the remaining 15% is from the marine waters. The Tanzania marine fishery comprises several tuna and tuna like species and sharks in its internal, territorial and Exclusive Economic Zone (EEZ). Domestic fleets targeting marine fish species in Tanzania are made up of artisanal multi-gear and multi-species fisheries operating in the shallow internal and territorial waters. The main gears are manually handled drift nets and anchored gillnets, ring nets, hand line, purse seiner and long lines. Most of the fishing vessels range from 3 to 11 meters long. Artisanal fishers fleets for tuna and tuna-like fishing are unable to access tuna-like resources in deep water because of low capacity in terms of vessel size and technology. Industrial fisheries in the EEZ are conducted by Distant Water Fishing Nations (DWFNs) through a licensing system. These use large scale purse seiner and long line vessels.

The main species of tuna and tuna-like fish harvested in the Tanzanian waters includes highly valued species such as *Thunnus albacares* (Yellowfin tuna), *Katsuwonus pelamis* (Skipjack tuna), *Thunnus obesus* (Bigeye tuna), *Euthynnus affinis* (Kawakawa), *Auxis thazard* (Frigate tuna), *Scomberomorus commerson* (Narrow barred Spanish mackerel), *Scomberomorus guttatus* (Indo-Pacific king mackerel), Sailfish and Swordfish. Large pelagic sharks in significant quantity are also found in the Tanzania EEZ.

Fishery of tuna and tuna like species and shark providing significant foreign exchange earnings, food

[10] https://zanzibar-ecotourism.org/protected-areas-in-zanzibar/
[11] WWF and WCS (2011). Protected Area Spatial Planning for Unguja and Pemba Islands, Zanzibar
[12] URT (2012). Submission to the Commission o the Limits of the Continental Shelf. Available at: https://www.un.org/Depts/los/clcs_new/submissions_files/tza59_12/Executive%20Summary_%20URT-DOC-001_18-01-2012.pdf
[13] IUCN (2020). Worldwide catalogue of case studies on Aquaculture and Marine Conservation, N°1: Zanzibar. IUCN - Gland, Switzerland.

security and employment in Tanzania. For instance, artisanal fishery statistics from the Fisheries Division (Tanzania Mainland only) for the year 2015 shows that 5410.2, 2226.3 and 6459.6 tonnes of tuna and tuna-like species, kingfish and sharks and rays worth of about USD 40,186 were caught respectively (National Fisheries Report 2016). For 2018, a nominal catch of 22,171 tons for tuna and tuna like species was reported. The potential total catch of tuna in Tanzania EEZ is not well documented but the reported data of purse seiners average 8,000 – 10,000 tonnes/year worth of USD 16,000,000 million was reported in 2016 by Deep Sea Fishing Authority (DSFA 2016). According to a study on tuna fisheries contribution to GDP in the SWIOFC Member Countries[14], the distribution of tuna exports from Tanzania worth a total of USD 38.06 million for the top 10 market destinations in 2017.

The Indian Ocean Tuna Commission (IOTC) provides information on the 2019 stock status of various targeted tuna and tuna-like species[15]. Based on this, the stock status of the main fish species targeted by the artisanal and industrial fisheries is presented in Table 5-2 below.

Table 5-2: Stock Status of Tuna and Tuna-like Fish found in the Tanzania EEZ

Fish Species	2019 Stock Status Determination	Outlook
Yellowfin tuna *Thunnus albacares*	Overfished and subject to overfishing	The increase in catches in recent years has substantially increased the pressure on the Indian Ocean stock, resulting in fishing mortality exceeding the MSY-related levels.
Albacore tuna *Thunnus alalunga*	Not overfished but subject to overfishing	Maintaining or increasing effort in the core albacore fishing grounds is likely to result in further decline in the albacore tuna biomass, productivity and CPUE
Skipjack tuna *Katsuwonus pelamis*	Not overfished and not subject to overfishing	Due to its specific life history attributes, skipjack can respond quickly to ambient foraging conditions driven by ocean productivity. Environmental indicators should be closely monitored to inform on the potential increase/decrease of stock productivity.
Bigeye tuna *Thunnus obesus*	Not overfished but subject to overfishing	Recent increase in catch from purse seine fleets have increased this pressure and the stock is estimated to be subject to overfishing.
Kawakawa *Euthynnus affinis*	Not overfished and not subject to overfishing	There is considerable uncertainty about stock structure and the estimate of total catches. Aspects of the fisheries for this species, combined with the lack of data on which to base a more complex assessment, are a cause for considerable concern. There is a high risk of exceeding MSY-based reference points if catches were maintained at 2013 levels
Frigate tuna *Auxis thazard*	Unknown	Between 2010 and 2014 catches have increased to over 95,000 t, rising to the highest levels recorded; although catches have since decline marginally to between 85,000 – 90,000 t since 2014. There is insufficient information to evaluate the effect that this level of catch or a further increase in catches may have on the resource.
Narrow barred Spanish mackerel *Scomberomorus commerson*	Overfished and subject to overfishing	There is considerable uncertainty about stock structure and the estimate of total catches. The continued increase in annual catches in recent years has further increased the pressure on this species' stock. The apparent fidelity of narrow-barred Spanish mackerel to particular areas/ regions is a matter for concern as overfishing in these areas can lead to localised depletion.

[14] Lallemand, Phillip (2019). Study on Tuna Fisheries Direct and Indirect Contribution to GDP and Wealth Distribution Patterns in the SWIOFC Member Countries. World Bank.

[15] IOTC–SC22 (2019). Report of the 22nd Session of the IOTC Scientific Committee. Seychelles, 2 – 6 December 2019. IOTC–2019–SC22–R[E]: 204 pp.

Fish Species	2019 Stock Status Determination	Outlook
Indo-Pacific king mackerel *Scomberomorus guttatus*	Unknown	There is considerable uncertainty about stock structure and total catches. Aspects of the fisheries for this species, combined with the limited data on which to base a more complex assessment, are a cause for concern
Sailfish *Istiophorus platypterus*	Uncertain	Catches since 2009 have exceeded the estimated MSY, and have also increased by 58% between 2008 and 2017. This increase in coastal gillnet catches and fishing effort in recent years is a substantial cause for concern for the Indian Ocean stock, however there is not sufficient information to evaluate the effect this will have on the resource.
Swordfish *Xiphias gladius*	Not overfished and not subject to overfishing	The decrease in longline catch and effort from 2005 to 2011 lowered the pressure on the Indian Ocean stock, and despite the recent increase in total catches, current fishing mortality is not expected to reduce the population to an overfished state over the next decade. There is a very low risk of exceeding MSY-based reference points by 2026 if catches are maintained at 2015 levels

Source: IOTC (2019).

The table above indicates that only three of the target species are not overfished and not subject to overfishing, namely, skipjack tuna, kawakawa and swordfish. Hence there is a need for judicious management and monitoring of the tuna and tuna-like fisheries resource to ensure its sustainability and that investment in the fisheries is feasible in the long term.

To this end, the URT has taken a number of steps. The Deep Sea Fishing Authority has signed a Letter of Understanding with IOTC regarding the implementation of the Regional Observer Scheme (ROS) in the United Republic of Tanzania. Under National Observer Program (NOP), observations for artisanal tuna and tuna-like and shark fisheries have been conducted in seven major landing sites in the country. However, there were no port observations or sampling recorded in year 2018 as there were no industrial fishing vessel licensed, trans-shipping or offloading fish at port. Tanzania has developed "EEZ Fisheries Research Agenda 2018-2027" to guide research that will support development and management of tuna and tuna-like fishery in Tanzanian waters. The agenda includes a number of research areas, namely biological research of tuna, tuna-like species, sharks and other living resources; environmental research; fishery related research; stock assessment research; business planning and social and economic research; and monitoring, control and surveillance. Tanzania has also drafted a National Plan of Action for the conservation and management of sharks and rays that is expected to be endorsed by 2020.

5.4 Socio-Economic Environment

5.4.1 Demographic Characteristics

At the end of 2020, the United Nations estimates Tanzania's population to be at 59.73 million. The current growth rate is 2.98% (Tanzania mainland 3.1% and Zanzibar 2.8%). Projections for 2018 indicated 52.6 million people in Mainland Tanzania, and 1.6 million in Zanzibar[16]. The average household size is 4.9 persons, with the average number of members lower on the Mainland (4.8) than in Zanzibar (5.6). Tanzania has a high fertility rate of 4.8 births per woman and a high birth rate of 36.2

[16] https://www.nbs.go.tz/index.php/en/census-surveys/population-and-housing-census/180-population-projections-for-the-period-of-2013-to-2035-at-national-level#:~:text=The%20national%20projections%20show%20that,with%20a%20population%20of%2089%2C204%2C781).

births per 1,000 people. More than 44.8% of the population under 15, 52% between 15 and 64 and just 3.1% over the age of 64.[17].

5.4.2 Land Tenure

The land tenure system in Tanzania mainland is predominantly customary under village land administration. A few instances of leasehold also exist particularly among the private large-scale commercial farmers. Government and parastatals also own some of the land in the regions. Acquisition of customary land is through either inheritance, seasonal renting, direct purchases or borrowing. In the 10 regions and 41 districts where AFDP will be implemented the land tenure system is predominantly customary because direct beneficiaries are smallholder farmers who in most cases acquired land through inheritance from family.

As for Zanzibar, the Land Tenure Act defines the formal land tenure system and all land is owned by the government and that any private rights are only rights to use the land (Right of Occupancy) and any transfers are transfers of rights and the improvements on the land rather than the land itself. The Rights of Occupancy can only be granted to Zanzibari citizens and it only has legal effect when registered under the Registered Land Act (Onkalo, 20110). Small holder farmers in Zanzibar own land through inheritance from family and in most cases without any form of ownership documents.

5.4.3 Land Use

Tanzania has a total land area of 881,289 square kilometres. The main land use types are settlements, agriculture, mining, grazing, hunting and non-woody product harvesting, water resources uses and conservation. Just under half the total land area is classified as suitable for agriculture, and only 24% of arable land is being currently utilized. Land under medium and large-scale farming is 1.5 million ha and land under smallholder farmers is about 8.6 million ha. Generally, the urban areas occupy 2% of the total geographical area even as they are now occupied by close to 30% of population.

A mix of settlements, grazing and agricultural land characterizes the districts where AFDP will be implemented in Tanzania mainland. As for Zanzibar, villages located close to Menai beach and Pemba Channel marine conservation areas are predominantly coastal communities where land is used for agriculture and settlements.

5.4.4 Health Status of Project Communities

The health status of Tanzania resembles that of other countries in the developing counterparts. The current life expectancy for Tanzania in 2020 is 65.46 years, a 0.48% increase from 2019[18]. Neonatal disorders, lower respiratory infections, HIV/AIDS, lschemic heart disease, uberculosis, congenital defects, malaria, diarrhoeal diseases, stroke and diabetes are the top causes of death[19]. Maternal, new born and childhood illnesses are also major causes of morbidity and mortality. The maternal mortality ratio is 410 per 100,000 live births. The country TB/HIV con-infection rate is estimated to be 37-39%: About 1.4 million people are living with HIV in Tanzania of whom 11% are aged between 15 – 24 years and 58% of whom are women.[20]

[17] https://worldpopulationreview.com/countries/tanzania-population
[18] https://www.macrotrends.net/countries/TZA/tanzania/life-expectancy#:~:text=The%20life%20expectancy%20for%20Tanzania,a%201.23%25%20increase%20from%202017.
[19] https://www.cdc.gov/globalhealth/countries/tanzania/default.htm
[20] https://www.who.int/countries/tza/en/

5.4.5 Education Status of Subproject Communities

Education has played a vital role in Tanzania's development since independence. In 2007, the country achieved nearly universal access to primary education. However, since then, enrolment of primary school-aged children has been dropping. Equity and quality pose major challenges. Girls, the poorest children, children with disabilities and children living in underserved communities are most vulnerable to dropping out of school or never going to school. Access to pre-primary education is very low and the poor quality of education dampens children's prospects of a productive future. The government is providing free education for primary school pupils and the first four years of secondary school. Enrolment increased from 6.7 per cent in 2003 to 33.4 per cent in 2016. Tanzania has attained gender parity in enrolment[21].

5.4.6 Access to Services

Electricity

Tanzania has made great strides in power connectivity in the last 5 years. The total population in Tanzania mainland that has access to power has increased from 67.5 in 2016 to 78.4% by the year 2019. Overall, the percentage of households connected to electricity in Tanzania mainland increased from 32.8%in 2016 to 37.7% in 2019. Looking at urban-rural differentials, 73.2% of households are connected to electricity in urban areas and 24.5% in rural areas. In the 10 regions where AFDP will be implemented, access to power by total population ranges from 67.2% in Singida to 85.8% in Pwani (Ministry of Energy, 2019)

Water and Sanitation

Access to clean and safe water in Tanzania has improved in the last five years i.e. from 2015 to 2020. For rural areas, water coverage has been improved from 48% in June 2015 to 70% by December 2019. In the same category for urban centres, coverage increased from 72% in June 2015 to 85% December 2019. As regards sanitation, only 30% of rural population have access to improved sanitation while school sanitation in terms of access to improved latrines has improved from 38% in 2009 to 90% in 2018. (Ministry of Water, 2020)

Telecommunication Services

Tanzania has been experiencing rapid growth in access to telecommunication services with a penetration of 88% of the total population in 2019. Currently, there are 48.9 Million telephone users. Internet services' users in Tanzania reached 26.8 Million in March 2019 which is about 48% of total population compared to only 5.3 Million in 2011. (TCRA, 2020)

5.4.7 Economic Activities in the Programme Area

Most of the people in the central and western zones of Tanzania mainland where AFDP will be implemented engage in agriculture as a source of food and business. Crops are grown further inland where the land is more productive as compared to the shoreline of Pwani, Tanga and Zanzibar where the soil is too sandy for agriculture. Coconut palms are grown in Tanga and Pwani regions. In Zanzibar agricultural production is mostly concentrated in the production of cloves, as well as coconut products and spices, which are a source of income for the villagers. Seaweed farming is another important economic activity undertaken in Zanzibar, especially by women.

About 68% of Tanzania's work force engage in farming, both in rural and urban areas. However, 83% of all farm holdings are run by small family farmers who dominate the agricultural sector by contributing around 75% of the total agricultural output. Tanzania records a continuous agricultural

[21] UNICEF (2017). Tanzania Education Fact Sheet. Available at https://www.unicef.org/tanzania/what-we-do/education

sector growth and is considered largely self-sufficient in its main staple crop maize. Cassava, paddy, sorghum and bananas are the second most widely grown staple crops by farmers[22].

The mean land holding capacity is around 1.2 hectares. Besides agricultural production, livestock keeping and poultry production play an important role and account for the second largest source of income; Tanzanian smallholders hold on average 3 Tropical Livestock Units. Around one fourth of the small family farms are female-headed (26%), usually engaging in crop production rather than in livestock keeping.

5.4.8 Household Income in the Programme Area

An average small family farm in Tanzania generates a gross income of about USD 5,032 per year, whereby the majority is acquired through on-farm activities (56%), particularly through the growing and selling of crops (47%). Although on farm income is still the most important source of livelihood, a growing share of smallholders engage in non-agricultural employment (e.g. manufacturing or the retail sector); almost one third of the annual income is generated through non-agricultural wages. Nevertheless, income poverty remains high and 39% of the smallholders in Tanzania live below the national poverty line. Local, often informal, markets remain the main selling channel for smallholders. About 98% of the sales take place in those local settings while 99% smallholder households rely on these local markets to buy their agricultural inputs too[23].

5.4.9 Physical Cultural Resources

Tanzania is a country of remarkable variety in physical and cultural geography that includes a vast array of natural and cultural heritage resources. The vast extent of protected areas strongly suggests that a substantial amount of the nation's cultural heritage is located within them. At present, the Ministry of Natural Resources and Tourism (MNRT) is responsible for the management and conservation of Tanzania's cultural and natural heritage resources. The Antiquities Act of Tanzania, enacted in 1964 (amended in 1979 and 1985), is the basic legislation for the management, protection, and preservation of movable and immovable tangible cultural heritage resources.

Zanzibar is extremely rich and diverse and is home to ancient civilizations. At various locations within Zanzibar stone town, there exist Arab settlements aged 300years old, European buildings aged 100 years old, graveyards, sacred areas, mosques, churches. Stone town is listed as one of world heritage sites under UNESCO. All these physical cultural resources located within Stone Town of Zanzibar are protected under Conservation and Development Authority Act of 2010.

5.5 Gender

Women play a crucial role in the agricultural sector, representing 52% of the labour force, but this notwithstanding the contribution of women in the rural Tanzanian economy is underestimated. The share of female landowners to total female agricultural population remains low at 27%, as compared to 73% for male. Maize, beans and cotton are the main crops that both male and female agricultural works produce for home consumption, while their decision on whether to produce them as cash crops or as the food for home consumption also affects the share. More women engage in subsistence farming. Some 90% of women (as compared to 60% for men) in agriculture are dependent on rain-fed harvesting, and there is a lower percentage of women as compared to men who take advantage of improved seeds, fertilizers and pesticides, have access to the materials and implements for production, or afford farm labour. Fishing, is traditionally been considered as a man’s job. Women have restricted

[22]FAO (2018). Small Family Farms Country Factsheet.
[23] Ibid.

access to productive assets (boats, equipment), but actually dominate different stages of the fisheries' value chains such as the small fish trading along the beaches and seaweed. Across Tanzania, women are vital to small-scale aquaculture projects.

Tanzania's population is largely young, accounting for 67% of the labour force and are mainly self-employed in informal and formal sectors. Youth unemployment in 2019 stood at 11.5%. The agricultural sector employs 22.9% of Tanzanian working youth (15-35 years). Every year estimated 800,000 youths enter the labour market with limited educational attainments. By 2030, it is projected that each year 1.6 million Tanzanians will enter the labour market. In addition, the youth population is projected to increase by 50% by 2050. This demographic dividend has tremendous potential to transform the supply and demand of food and impact the agri-food industry. Agriculture is the largest employer in the country and critical for inclusive growth and poverty reduction. Youth involvement in agriculture, fisheries and aquaculture is hampered by limited access to productive resources, including capital, limited entrepreneurial skills, poor rural infrastructure, capital accessibility, and drudgery of fisheries and aquaculture due to limited access to modern technologies. Majority of youth do not have practical experience in the fishing and aquaculture sector and especially females, considering it as an occupation for older males. Others prefer engaging in office jobs instead of field activities and yet fisheries and aquaculture is a highly practical field and therefore training and exposure may incentivise youth.

6 Stakeholder Consultations

6.1 Background and Rationale

Project stakeholders are usually people or institutions who may be affected or affect, influence, have direct or indirect interest on the project or program. They form an important element in the project/program because their views and concerns help the design team to accommodate pertinent issues that need to be addressed for achievement of desired results of the Programme. Thus consultations with stakeholders were considered an important part of developing this ESMF as they have provided valuable input to develop acceptable and sustainable project design this implementation plans.

SECAP requires that meaningful consultation with communities (especially targeted groups) that are likely to be affected by IFAD's operations be conducted throughout the Project life cycle, in order to ensure that the communities contribute to the development of management plans, and also to ensure broad community support to the Programme. Communities should participate in providing feedback on the safeguards documents, and in particular project affected people should endorse the proposed mitigation/risk reduction and management measures.

It is for this reason, consultation of stakeholders located at target areas of AFDP was conducted. Stakeholders consultations were conducted between 4th and 15th June 2020.

Stakeholders at the national level, included GoT representatives in Dodoma and Dar es Salaam from the Prime Minister's Office (PMO), Ministry of Agriculture (MoA), Ministry of Livestock and Fisheries (MLF); Ministry of Finance and Planning Tanzania Mainland (MOFP-TZ), National Environment Management Council (NEMC), Tanzania Meteorological Agency (TMA), National Bureau of Statistics (NBS), Department of Water Resources in the Ministry of Water (MOW). In Zanzibar, the team met with representatives from the Ministry of Finance and Planning Zanzibar (MOFP-ZNZ), and Ministry of Agriculture, Natural Resources, Livestock and Fisheries of Zanzibar (MANRLF) and Deep Sea Fishing Authority (DSFA). Other agencies consulted included Tanzania Agricultural Research Institute (TARI), Agricultural Seed Agency (ASA), Tanzania Official Seed Certification Institute (TOSCI), Aquaculture Development Centre (ADC), Tanzania Fisheries Research Institute (TAFIRI), Tanzania Fisheries Cooperative (TAFICO), Zanzibar Fisheries Cooperative (ZAFICO). In order to better understand the status of fisheries in the Western Indian Ocean, discussions were held with The Nature Conservancy (TNC) in Tanzania and Seychelles, the International Union for the Conservation of Nature and Natural Resources (IUCN), the Indian Ocean Tuna Commission (IOTC), and the World Wildlife Fund Tanzania (WWF-Tanzania).

During field visits to selected target areas of the program, the following six categories of stakeholders were consulted: farmers, agrodealers, aqua farmers, sunflower processor, fishers and private owners of fishing vessels and seaweed farmers.

The list of all persons consulted is presented in Annex 2. Details of the outcomes of consultations are presented in Chapter 6

6.2 Consultation Locations and Stakeholder Categories

The target area for AFDP covers four zones comprised of 10 regions with a total of 41 districts in Tanzania mainland and 2 regions with 2 marine conservations areas in Zanzibar. During field visits various categories of stakeholders found in those target areas were consulted. Visited areas are Morogoro, Tabora, Geita, Pwani and Unguja in Zanzibar. The number of persons consulted per category of stakeholder is as shown in the table below:

Table 6-1: Categories and Number of Stakeholders Consulted

Categories of stakeholder	Location	Number
Crops farmers	Igunga	6
Agrodealers	Morogoro, Igunga, Nzega	3
Sunflower Processor	Igunga	1
Aqua Farmers	Morogoro, Chato, Igunga	21
Fishers	Bagamoyo	4
Owners of Private Fishing Boats	Dar es salaam, Zanzibar	6
	Total	**41**

6.3 Issues Discussed during Consultations

As pointed above there are different categories of stakeholders in target areas where interventions of AFDP will be made. In order to get the most out of the exercise, issues discussed with stakeholders at a particular location focused more on topics relevant to the respondents in that setting. Focused group discussions guided by questionnaires were used to collect stakeholders' views and concerns. Common issues discussed in all stakeholders meetings were as follows: government programs that respondents have had benefited from in the past, training or technical support that respondents have ever received, organizations that had provided trainings, challenges or problems facing respondents, type of support that respondents require to address their challenges, sources of loans or financing for their activities/projects, forms of associations that respondents are members of, main expectations from associations and capacity building needs of their associations. During discussions moderators were careful not to raise expectations of respondents and beneficiaries on AFDP as this might affect implementation of the program.

6.4 Summary of Outcomes of Stakeholder Consultations

One of the main objectives of the consultation exercise was to get perspectives of targeted beneficiaries so as to inform the project design. It is from the stakeholders' views and concerns that project design team is able to see the Programme from the beneficiaries' side and take necessary action including modifying strategies of interventions. To ensure that desired results of consultations are achieved, stakeholders engagement was conducted in an open and transparent manner without any form of influence. At the end of discussion every respondent felt to have been afforded an opportunity and ample time to give their honest opinion' on topics discussed. Outcomes of consultations are as summarized in the table below:

Table 6-2: Summary of Stakeholder Consultations

SN	Stakeholder Categories	Key Issues/ Stakeholder Concerns
1	Crops farmers	• Farmers in Morogoro prefer ASA seeds (maize and sunflower) because of high yield • At Igunga, ASA maize seeds called STUKA are most preferred by farmers but usually not sufficiently supplied and at times not available at all. Therefore, adequate supply of STUKA seed from ASA should be ensured through out the planting season • Access to loans for smallholders farmers is a challenge as commercial banks are not interested in lending to farmers • Long dry spells and short rain seasons affect crop yields in Nzega-Tabora • Soil infertility could be the reason for low yield per acre in Nzega, hence research is needed to check soil fertility
2	Agrodealers	• ASA in Morogoro sells same seeds at their shop at retail scale thus somehow posing as a competitor with agrodealers who buy from ASA. • Some farmers prefer to buy directly from ASA shop in Morogoro • Agrodealers in Morogoro obtain seed from ASA as and when they need due to proximity • Agrodealers in Nzega are not aware of ASA Maize seed. • There is high demand of ASA maize seeds called STUKA at Igunga. Agrodealers need this type of seed but supply is inadequate
3	Processor of sunflower	• Factory capacity of processing is 400kg per day to get sunflower cake and sunflower oil • Sunflower seed for processing is scarce at Igunga because of few farmers grow sunflower because of lack of availability of seeds • Main suppliers of sunflower seed are from Singida
4	Aqua Farmers	• Aqua farmers have ponds of average size 30mx15m • Main challenges are o Lack of fish feed of good quality o Fish feed is too expensive, o Impossible to access loans from commercial banks, o Many farmers lack knowledge on proper fish farming techniques, o Water scarcity especially for fish farmers doing integrated rice-fish farming at Igunga, o Fisherlings are scarce at Chato district because there is no hatchery n the whole district, o Loans available at district council for youth groups are too little (USD 2,600 for 6 youths), o Good Market of table size fish not available nearby hence need to transport harvested fish to other towns • Suggestions: o Government should facilitate access to loans for fish farmers, o Government should start producing quality fish feed, o Extension services needed by fish farmers, o Training to farmers on how to produce fish feed for their projects, o Government should lower import duty/taxes to make imported fish feed affordable
5	Fishers	• There is a Beach Management Unit (BMU) at Dunda landing site Bagamoyo with a membership of over 1000 who are usually fishermen, fish vendors or small holder business owners operating at site. All these are beneficiaries of Bagamoyo fish landing site. • Challenges of Fishers:

SN	Stakeholder Categories	Key Issues/ Stakeholder Concerns
		○ There is no proper fish market at the moment, ○ No drying racks for small pelagic fish(dagaa), ○ Ice for fish preservation is expensive, ○ Access to loans from commercial banks is difficult. • Suggestions: ○ New modern Fish market is needed at Bagamoyo to reduce fish losses, ○ The beach management unit/fisheries cooperatives need to be empowered to be able to conduct patrols along the beach to enhance security, ○ There should be a way of helping fishers to access loans as commercial bank do not trust them.
6	Owners of Private Fishing Boats	• Deep sea fishing is lucrative business but need fishing vessels with skilled and experienced captain and shipmaster • Fish stocks plenty in the deep sea as well as inshore waters • Local market for fish is available and external markets is a better option • Long liners need lots of bait which is expensive if sourced locally • Deep Sea Fishing Authority has low capacity due to poor funding • Presently there is no foreign vessel fishing in EEZ.

6.5 Other Concerns

Stakeholders consulted, especially those involved in crop farming at small scale level, are concerned about extreme climatic conditions like dry spells and unpredictable rainfall patterns. As regards aquafarmers in urban areas, their main concerns are challenges in accessing funds for expansion of their projects. Furthermore, aquafarmers in urban areas face water scarcity problems: water is essential for the operation of their ponds.

6.6 Priorities for AFDP Interventions

An analysis of stakeholders' views and concerns point to the following critical issues that need intervention:

- Insufficient supply of improved seed varieties during planting season is a major challenge that needs immediate attention. ASA is best positioned to meet this demand if production of seed is improved.
- Unavailability of fingerlings for aquafarmers who wish to expand their projects poses as a major challenge in aquaculture. ADCs should supply fingerlings from their nurseries and train aquafarmers on how establish nurseries.
- Unaffordable prices of imported good quality fish feed for aquafarmers needs special attention. ADCs should train aquafarmers on how to manufacture fish feed from raw materials available locally.
- Post-harvest losses of fish catch due to unavailability of cold rooms is a challenge to small holder fishers. Cold room facilities at fish landing sites is urgently needed to address this challenge.

7 Potential Environmental, Social and Climate-Related Impacts of AFDP Interventions and their Mitigation

The Programme components have been described in detail earlier in this report (Section 2.3). The Programme components will have positive and negative implications on environmental, social and/or climate-related aspects to varying extent depending on the nature of the interventions. Risks and impacts that are typically anticipated, together with generic mitigation and management measures are described in the following sections. In addition, the Programme Implementation Manual (PIM) will provide guidance for incorporating environmental mitigation measures at the various stages of the subprojects, as well as permitting and licencing obligations.

7.1 Benefits of AFDP

The Programme has been designed to provide numerous environmental, socio-economic and climate resilience benefits for different stakeholders and target groups. These are summarised in Table 7-1 below. AFDP will impact an estimated 363,875 direct households, equivalent to 2 million beneficiaries who will receive project services. It aims to target approximately 50% women and 30% youth.

Table 7-1: AFDP Benefits

Target Group	Expected Benefits
Environmental and Natural Resources	
National Fisheries Sector	• Management of natural resources will address destructive fishing practices and illegal mangrove cutting • Support to the implementation of the Tuna Fisheries Management Plan will contribute to sustainable management of marine resources.
Semi-commercial fisheries	• Investments in stock assessments • Selective fishing gears will reduce catching non-targeted species • Participatory management of natural resources will address destructive fishing practices and illegal mangrove cutting
Artisanal fishers	• Capacity building for community-based Beach Management Units/Fisheries Cooperatives in sustainable fishing practices and monitoring and reporting IUU fishing activities • Capacity building to protect coastal and marine resources will contribute to improving fish stocks • Increased use of environmentally friendly adaptive techniques and technologies in fishing, processing and storage • Participatory management of natural resources to address destructive fishing practices and illegal mangrove cutting
Aquafarmers (including seaweed farmers)	• Increased use of environmentally friendly adaptive techniques and technologies in fishing, processing and storage
Small scale seed producers	• Access to, and adoption of, environmentally friendly technologies in improved crop seed production
Socio-Economic	
Project communities	• Opportunities for income diversification in fish and seed value chains • Improved nutrition from bio-fortified maize and beans/pulses, sunflower, seaweed and fish species of high nutritive value

Target Group	Expected Benefits
	• Improved food security from increased availability of fish protein (from targeted catch as well as bycatch)
Smallscale seed producers and agrodealers	• Support in seed distribution and marketing will improve productivity • Access to high quality inputs (seeds, fertilizers, fingerlings) and support to processing and improving farmers' access to markets will cushion impacts in the post COVID-19 situation.
Aquafarmers, artisanal fishers, seaweed farmers	• Support in fingerling distribution,tissue culture and marketing will improve productivity • Access markets will cushion impacts in the post COVID-19 situation
Women	• Reduced workloads due to increased resilient crop yields • 90% seaweed producers and processors will be women • Enhanced income leading to greater decision-making power for women within the household • Economic empowerment to control income and improved decision making • Access to better education and health care for children as a result of enhanced income of parents.
Youth	• Improved opportunities and skills for small enterprises in processing, storage and value addition of crops and fish products • Enhanced capacity as out-growers for seed companies • Enhanced capacity as aquafarmers and aquaculture service providers • Enhanced capacity as seaweed farmers • Enhanced access to financial services • Increased participation in decision-making
Financial institutions	• Increased linkage with smallscale seed producers and fishers in different value chains
Climate Change Resilience	
National governments and communities	• Reduced expenditure for disaster management and rescue missions hence more resources directed towards other social services
Project communities	• Increased the resilience and adaptive capacity of local people to the threats of climate change through a diversification of income streams • Availability of locally adapted seeds that are more resilient to climate change, pests and diseases.
Smallscale seed producers and agrodealers	• Solar-powered pumps for irrigating seed fields will eliminate need for fossil fuel driven pumps • Access to locally adapted seeds that are more resilient to climate change, pests and diseases.
Aquafarmers (including seaweed farmers)	• Solar-powered dryers will eliminate need for fossil fuel driven drying technologies • Availability of adequate water for ponds throughout the year as there will be shorter dry spells • Seaweed farming has a negative carbon footprint[24]

[24]Bjerregaard,Rasmus; Valderrama,Diego; Radulovich,Ricardo; Diana,James; Capron,Mark; Mckinnie,Cedric Amir; Cedric,Michael; Hopkins,Kevin; Yarish,Charles; Goudey,Clifford; Forster,John (2016); Seaweed aquaculture for food security, income generation and environmental health in Tropical Developing Countries (English). Washington, D.C. : World Bank Group.
http://documents.worldbank.org/curated/en/947831469090666344/Seaweed-aquaculture-for-food-security-income-generation-and-environmental-health-in-Tropical-Developing-Countries

Target Group	Expected Benefits
Artisanal fishers	• Use of FADs enables fishing at specific sites, reducing fuel consumption by fishing vessels, and therefore resulting in reduced carbon emissions
Non-fisher communities	• Use of solar powered drying technologies for fish and seaweed eliminates need for fossil fuel-driven dryers • Increased resilience and ability to cope with climate risks in fish value chains

It is expected that support to the Tuna Fisheries Management Plan proposed under ASDP, and the proposed GEF-supported Marine Spatial Plan, will contribute to the protection and conservation of marine resources, which will have a positive effect on tuna (and other) fisheries stock and result in more sustainable fisheries operations.

Moreover, infrastructure associated with fisheries and crop seed production and value chains will be designed so as to be climate resilient, taking into consideration factors such as siting, water availability, and renewable energy technologies.

7.2 Potential Environmental, Social and Climate-Related Risks and Impacts from AFDP Interventions

Table 7-2 below summarises risks and adverse impacts that may result from AFDP supported activities.

Table 7-2: Typically Anticipated Risks and Adverse Impacts of AFDP Supported Activities

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
Component 1: Enhanced productivity of crop seeds, fisheries and aquaculture			
Subcomponent 1.1: Crop seed systems development: *National seed demand and supply coordination; innovation development and Early Generation Seed production; basic seed multiplication;bulking-up certified seed; dashboard for seed production; and seed quality control and certification*			
➢ Irrigated fields as seed farms at ASA (2 Nos.) and TARI EGS (2 Nos) – all <100ha	Aquifer depletion due to over abstraction leading to reduction in supply for irrigation Excavation activities and/or clearing of vegetation leading to soil erosion, dust emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources Use of agrochemicals, leading to pollution due to leaching, seepage or transmission of agrochemicals through the soil into water sources; threats to aquatic ecology, including bio-magnification of toxins in tissues of aquatic fauna, and/or species die off; loss of biodiversity, ecological imbalances, caused by poisoning of non-target species, particularly bees and other beneficial insects; resistance to pesticides and pest resurgence. Oil pollution from spills or leaks fuel, oils and lubricants from farm machinery Overwatering of fields leading to water logging, poor drainage, salinization	Aquifer recharge hindered by prolonged drought Cleared / excavated areas susceptible to erosion caused by rain and wind. Excessive rain/floods causing water logging/poor drainage eventually causing salinization, soil erosion and damage to crop Extreme climatic events resulting in pestilence Clearing of vegetation for farm preparation activities, tilling of land and excessive use of fertilizers leading to GHG emission.	Reduced availability of water for other planned developments. Poor application and handling of agrochemicals: touching, inhaling or ingesting toxic chemicals leading to dermatological or gastric ailments, or poisoning.
➢ Seed processing plants (incl. dryer)	Use of agrochemicals for treatment may result in pollution due to leaching, seepage or transmission of agrochemicals into water	Use of fossil fuels for dryers leading to GHG emissions	The movement of materials into construction sites for processing plants, treatment and

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
➢ Seed treatment and storage facilities for produced seed	sources (eg when processing area is washed); poisoning of non-target species; resistance to pesticides and pest resurgence Poor treatment application methods and improper storage leading to proliferation of aflatoxins – aflatoxins are carcinogenic, cause stunting, birth defects and immune-suppression	Excessive rain, wind or floods may damage storage structures and access road/ water infrastructure.	storage facilities, and construction activities may cause accidents and injuries to workers Accidents and incidents, electrocution, from handling machinery and working with electrical systems. Excessive noise levels from dryers causing workers' hearing impairments. May also affecting neighbouring homes/premises.
➢ Workshops for farm equipment maintenance	Oil pollution from spills from storing, handling and disposal of fuel, oils and lubricants (eg for farm machinery) Excessive noise from working machinery, drills, etc. Risk of fire destroying structures and surrounding vegetation, and causing air pollution. Generation of waste such as food waste, packaging, scrap metal leading to health risks from proliferation of vermin, obstruction of access	Excessive rain, wind or floods may damage workshop buildings, outhouses and road/ water infrastructure.	Movement of materials into the workshop construction site, and building works causing accidents and injuries to workers Accidents and incidents , electrocution, from handling machinery and working with electrical systems. Risk of fire spreading to neighbouring farms, and causing injury/fatalities to workforce and neighbours. Excessive noise levels causing workers' hearing impairments and affecting neighbouring homes.
➢ Water reservoirs (volume <3million m^3)	Excavation activities and clearing of vegetation leading to soil erosion, dust emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources Depletion of ecological flow in water source from which water diverted to reservoirs.	Non availability of water during prolonged drought periods.	Movement of materials into the reservoir construction site, and construction activities may cause accidents and injuries to workers Failure of reservoir structure causing hazard risk to workers on site and surrounding communities

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
➢ Boreholes	Depletion of aquifers due to over-abstraction	Prolonged periods of drought may affect aquifer levels.	Competition for water sources with community sources (eg. if only a limited number of abstraction permits issued
➢ Dashboard for seed production	Generation of e-waste: disposal methods release potentially toxic chemicals	Manufacture of electronics releases CO2. Disposal of e-waste by burning emits GHGs	Emissions from burning e-waste are toxic to humans and animals.
➢ Laboratories at ASA and TARI seed farms, and at certification laboratory at TOSCI	Excavation activities and clearing of vegetation leading to soil erosion, dust emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources Generation of waste such as food waste, packaging, scrap metal leading to health risks from proliferation of vermin, obstruction of access Disposal of laboratory reagents, affecting functionality of septic tanks and sewage systems, and leading to chemical pollution of water courses and soil. Risk of fire destroying structures and surrounding vegetation, and causing air pollution.	Excessive rain, wind or floods may damage laboratory buildings and road/ water infrastructure.	Movement of materials into the laboratory construction sites, and the actual construction activities by workers may cause accidents and injuries Poor storage, handling of chemical reagents where lab workers touch, inhale or ingest toxic chemicals leading to dermatological or gastric ailments, or poisoning. Risk of fire spreading to neighbouring premises, and causing injury/fatalities to workforce and neighbours.
Subcomponent 1.2: Fisheries and aquaculture development *Development of sustainable artisanal marine fisheries production systems; Private-Public-Producer Partnerships (4Ps) joint venture for fishing in the EE; increasing aquaculture productivity and output; increasing mariculture productivity and output*			
➢ Provision of fishing gear to artisanal fishers (90 FADs)	Catch of juvenile fish species, bycatch of vulnerable non-target species, catch of sea birds Improved catching efficiency leading to higher fishing mortality of target species.	Tropical cyclones, unusual wave action destroying/cutting loose FADs, leading to ghost fishing (drifting FADS).	Accidents and incidents from operating fishing vessels and FADs Inequitable labour and working conditions.

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
	Modification of habitat due to number of FADs to be used. Damage to coastal habitats. Interference with other maritime activities (eg shipping routes, hovercraft)		
➢ Mainland: Fishing vessels x4 (25m) for deep sea fishing, fish processing and storage >50T /day ➢ Zanzibar: Fishing vessels x4 (18m) for deep sea fishing, fish processing and storage <50T /day	Catch of juvenile fish species, bycatch of vulnerable non-target species, catch of sea birds Improved catching efficiency leading to higher fishing mortality of target species. Pollution of the sea from discharge of oily bilge water, sanitary waste and solid waste. Risk of fire on board, resulting in pollution of the sea from fire debris.	Tropical cyclones andinclement seas leading to vessels getting lost, damage to vessels, capsizing. Fuel use by vessels for sailing, ice production, processing and storage on board leading to GHG emissions	Accidents and incidents, electrocution, from handling vessel engines, machinery and ice making, processing activities. Risk of fire from onboard activities causing injury/fatalities to crew and fishers. Excessive noise levels from vessel engines, ice making and processing activities causing fishers' hearing impairments Inequitable labour and working conditions. Restrictions on imports of fish imposed by target countries due to COVID-19 may affect output and earnings Disruptions in transportation modes due to COVID-19 movement restrictions may result in delays and fish rotting prior to reaching markets.
➢ Aquaculture demonstration sites at 3 ADC facilities	Excavation activities and clearing of vegetation leading to soil erosion, dust emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources/sea Pressure on water resources. Discharge of water from ponds containing organic matter, antibiotics, hormones and even agrochemicals	Prolonged periods of drought may affect water availability.	Competition for water between demonstration centres and community water requirements.

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
➢ Boreholes at 3 ADC centres plus one at Boma Road for Kingolwira ADC	Depletion of aquifers due to over-abstraction	Prolonged periods of drought may affect aquifer levels.	Competition for water sources with community sources (eg. if only a limited number of abstraction permits issued
➢ Tissue culture nursery in Unguja, incl. seaweed technologies and demonstration farm	Risk of escape of seaweed culture to open sea resulting in cross-breeding between domesticated and wild strains; harbouring of parasites; unintentional introduction of non-indigenous 'hitchhiker' species, including pathogens Marine pollution from artificial material (eg. polypropylene) added to provide substrate for seaweed growing being discarded/lost.	Tropical cyclones and inclement seas may uproot seaweed Sea level rise may make it difficult to farm	Conflicts in use of coastline for seaweed vs tourism Women may be marginalised from participating in seaweed cultivation if access to training is limited and if technologies make it difficult for women (eg if seaweed is to be grown in deeper water)
➢ Mariculture training centres x 2 (Unguja and Pemba) <360 students	Excavation activities and clearing of vegetation leading to soil erosion, dust emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources/sea	Threat to buildings from sea level rise if located along beach.	Movement of materials into the construction sites, and the actual construction activities by workers may cause accidents and injuries
Component 2: Improved market access, value addition and private sector development			
Subcomponent 2.1:Quality seed use and business development *Regional multi-stakeholder innovation platforms; promoting supply and access to improved seeds; promoting awareness and demand for improved seeds; facilitating technical and business synergies for effective market linkages with grain buyers and processors*			
➢ Distribution networks, linkages between agrodealers and farmers to facilitate access to improved seeds ➢ Support FO for services for member access to inputs and markets ➢ Promotion of use of improved varieties and CSA practices (targeted support to extension) ➢ On-farm seed maintenance and multiplication	n/a	n/a	Inadequate consultation of various stakeholders, particularly with vulnerable and disadvantaged members of the communities may result in reduced uptake of linkages, promoted varieties, collaboration

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
➢ Promoting collaboration with businesses, commodity wholesalers, public/private consortia. ➢ Leveraging financing instruments through TADB for off-takers, seed businesses and processors			
➢ ICT platforms for dissemination of information on seed availability (improved varieties and quantities)	Generation of e-waste: disposal methods release potentially toxic chemicals	Manufacture of electronics releases CO2. Disposal of e-waste by burning emits GHGs	Emissions from burning e-waste are toxic to humans and animals.
Subcomponent 2.2: Fish market development and value addition *Reducing post-harvest losses; increasing value/income from aquaculture production; seaweed processing and marketing*			
➢ Ice plants for smallscale fishers x 8 (cap <50T/day) ➢ Cold chain: Cold storage facilities (40 t/facility) x2 and coolboxes ➢ Refrigerated trucks x5	Excavation activities and clearing of vegetation leading to soil erosion, dust emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources/sea Pressure on water resources – affecting availability of water for ice plants and refrigeration.	Use of fossil fuels for ice plants and refrigeration will emit GHGs Threat to buildings from sea level rise if located close to beach.	Accidents and incidents from handling machinery and ice making activities. Electricity supply to community may be affected due to demand from ice plants and processing plants Inequitable labour and working conditions.
➢ Construction of fish market at Kipumbwi, incl. storage and ice plant	Excavation activities and clearing of vegetation leading to soil erosion, dust emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources/sea Pressure on water resources Risk of fire destroying structures and surrounding vegetation, and causing air pollution.	Threat to buildings from sea level rise if located close to beach.	Accidents and incidents from handling machinery, ice making, processing activities. Competition with local communities for fresh water and electric power. Risk of fire spreading to neighbouring premises, and causing injury/fatalities to workforce and neighbours. Inequitable labour and working conditions.
Mariculture and aquaculture processing ➢ Seaweed drying racks	Excavation activities and clearing of vegetation leading to soil erosion, dust	Threat to buildings from sea level rise if located close to beach.	Inequitable labour and working conditions.

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
➢ Solar dryers/drying tents for dagaa and seaweed ➢ Fish feed mills, milling machine/plant ➢ Packaging materials	emissions, loss in biodiversity; and resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources/sea Fish feed mills and milling plants causing dust emissions, odour Solid waste from packaging off-cuts.	Long intensive rain may affect effectiveness of solar drying process.	Inadequate consultation of various stakeholders, particularly women and youth may result in reduced uptake of improved mariculture/aquaculture processing technologies.
Increasing value/income from aquaculture production: ➢ Developing/strengthening the ADC-Farmers clusters and linkages with private sector hatcheries; ➢ Establishing aquaculture field/business schools to facilitate learning for fish farmers reaching youth and women; ➢ Enhancing collective marketing strategies; ➢ Expanding market horizon for farmed fish and basic cold chain facilities (e.g. cool boxes).	n/a	n/a	Inadequate consultation of various stakeholders, particularly with vulnerable and disadvantaged members of the communities may result in reduced uptake of linkages, attendance at field schools, enhanced marketing
Sea weed value chain: ➢ Conducting market and value chain analysis of seaweed; ➢ Strengthening seaweed clusters and cooperative societies to enhance access to markets and increase the competitiveness of seaweed value chains and identify opportunities for improving the competitiveness of seaweed; ➢ Enhancing women's capacity on standards and quality control in seaweed processing and value addition; ➢ Facilitating the emergence of seaweed small and medium enterprises and their linkages with financial institutions and business service providers; ➢ Promoting the engagement of youth in seaweed value chain activities to increase sector productivity and create employment.	n/a	n/a	Inadequate consultation of various stakeholders, particularly with vulnerable and disadvantaged members of the communities may result in reduced uptake of value chain enterprises. Restrictions on imports of processed seaweed imposed by target countries due to COVID-19 may affect output and earnings. Disruptions in transportation modes due to COVID-19 movement restrictions may result in delays in reaching markets.

Component / Activity	Adverse Environmental Risks and Impacts	Adverse Climate Risks and Impacts	Adverse Social Risks and Impacts
Component 3: Policy Engagement and Programme Management and Coordination			
Sub-component 3.1. Policy engagement and institutional strengthening			
Policy engagement including data management, institutional reforms in public institutions toward business development and 4P business models, development of approach for aquaparks, and Scaling-Up Strategy.	n/a	n/a	n/a
Sub-Component 3.2. Programme management, coordination, monitoring and evaluation (M&E)			
Implementation Readiness and Start-up Plans; Planning, monitoring and evaluation Supervision and implementation support missions Mid-Term Review (MTR) and Programme Completion Review Learning and knowledge management (KM)	n/a	n/a	Programme start up, support missions may be affected or delayed due to travel restrictions because of the COVID-19 pandemic
Sub-component 3.3. Emergency response and recovery post COVID-19			
Support for immediate response to an eligible crisis or emergency, as needed, in coordination with the PMO	Not known at this time	Not known at this time	Not known at this time

7.3 Environmental, Social and Climate Management Plan

The table below summarises an environmental, climate and social management plan (ESCMP) for AFDP based on typical impacts and risk that may arise and generic mitigation and management measures.

Table 7-3: AFDP Environmental, Social and Climate Management Plan

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
Environmental Risks and Impacts						
Abstraction of water for irrigation and aquaculture resulting in depletion of aquifers, particularly in the dry season leading to threats to aquatic ecosystems.	• Adhere to permitted abstraction volume as stipulated in water user permits.	Meetings and site visits; consultations with farmers and surrounding communities	ASA, TARI, ADC Water Basin Offices	Water abstraction records at intakes and boreholes	Quarterly	Part of routine operating costs
Excavation activities and/or clearing of vegetation during construction of irrigation schemes, buildings/workshops, storage and processing facilities, leading to: - Soil erosion, - Dust emissions, - Loss in biodiversity; - Resulting increase in runoff also may lead to deterioration of water quality (sediment load) in water sources and/or sea	• Minimise/prevent soil erosion by controlling earthworks, installing and maintaining drainage structures and erosion control measure; use zero-till/reduce till methods of land preparation. • Mitigation through restoration of the sites after works in accordance with contractors environmental and social management plans (CEMPS) • Any existing riparian vegetation should be maintained (not cleared) • Use zero-till/reduced till methods for land preparation • If mechanized clearing, where water is available, keep dust down by watering exposed/ worked surfaces • If possible, schedule clearing activities such that they avoid the height of the dry seasons. • Careful and continuous supervision of clearing activities so that only	Meetings and site visits	ASA, TARI, ADC	Site monitoring reports	Weekly or monthly during construction	Included in Programme implementation and routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
	areas required for plot/fields are cleared. • Monitor water quality					
Use of agrochemicals, leading to pollution due to leaching, seepage or transmission of agrochemicals through the soil into water sources; threats to aquatic ecology, including bio-magnification of toxins in tissues of aquatic fauna, and/or species die off; loss of biodiversity, ecological imbalances, caused by poisoning of non-target species, particularly bees and other beneficial insects; resistance to pesticides and pest resurgence.	• Prepare and implement an Agrochemical Management System, and an Integrated Pest Management Plan • Minimise use of agrochemicals through adopting conservation agriculture techniques, explore organic/natural fertilizers, agrochemicals • Manual removal of weeds • Careful supervision of application of agrochemicals • Use agrochemicals registered and approved by MoA/MANRLF, WHO and FAO • Train farmers/aquafarmers in proper use, handling, storage, and disposal of agrochemicals. • Ensure agrochemical containers are disposed of as hazardous waste according to waste management regulations • Keep records of agrochemicals used, application amounts. • Monitor water quality in soils and water sources	Meetings and site visits; consultations with farmers and surrounding communities	ASA, TARI, PHS, PPD	Agrochemical Management System documentation IPMP prepared Training records Records of agrochemicals stored and applied	AMS and IPMP in place at start up Subsequently quarterly monitoring	Included in Programme implementation and routine operating costs
Over-watering of fields leading to water logging and salinization	• Control water supplied to fields	Meetings and site visits	ASA, TARI	Site visit reports, water consumption records	Monthly	Routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
	• Fields should have slight gradients so as to allow drainage of excess water • Maintain drainage canals and other drainage structures					
Discharge of contaminated water from aquaculture ponds entering surface water bodies or contaminating soil.	• Monitor water quality discharged from ponds • Treat effluent to conform with Tanzania Bureau of Standards TZS 860: 2005 General Tolerance Limits for Municipal and Industrial Wastewaters prior to discharge into surface waters • Possible use of effluent for watering farmland (provided it meets national standards)	Meetings and site visits	ADC, Municipal Councils, Water Basin Offices in respective areas	Maintenance records Water quality test results	Quarterly	Routine operating costs
Disposal of laboratory reagents, affecting functionality of septic tanks and sewage systems, and leading to chemical pollution of water courses and soil.	• Wastewater quality testing • All effluent from laboratories to be treated to conform with Tanzania Bureau of Standards TZS 860: 2005 General Tolerance Limits for Municipal and Industrial Wastewaters prior to discharge into septic tanks, sewage systems or surface waters	Meetings and site visits	TOSCI, Municipal Councils, Water Basin Offices in respective areas	Maintenance records Water quality test results	Quarterly	Routine operating costs
Oil pollution from spills or leaks fuel, oils and lubricants from farm machinery, oily bilge water from vessels	• Where fuel is stored in bulk, the fuel tank should be contained in a bund of 110% tank capacity • Where fuel drums are used these should be stored on sump pallets. • Establish procedures for fuel delivery; decanting/draining; use,	Meetings and site visits	ASA, TARI, ADC TAFICO, ZAFICO	SOPs prepared Site visit reports	SOPs prepared at start up Subsequently quarterly monitoring	Included in Programme implementation and routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
	storage; spill response; disposal of waste oil; handling of oil products • Establish procedures for treatment of oily bilge water: use of oil/water separators and storage in waste oil collection tanks until vessel can dispose of it safely onshore.					
Excessive noise from working machinery, drilling boreholes, etc.	• Adhere to guidelines as prescribed in the First Schedule of the Environmental Management (Standards for the Control of Noise and Vibrations Pollution), 2014 • Install noise reduction technologies in machinery, generators, etc.	Meetings and site visits	ASA, TARI, ADC	Noise monitoring reports Noise reduction technologies installed and reported in site visit reports	Monthly	Included in Programme implementation and routine operating costs
Generation of waste such as food waste, packaging, scrap metal leading to health risks from proliferation of vermin, obstruction of access	• Dispose of solid waste as per best practice guidelines: recycle, reuse, recover and reduce waste • Sensitise construction workers, farmers, fishers, processors, on waste management practices	Meetings and site visits	ASA, TARI, ADC	Site visit reports	Monthly	Routine operating costs
Risk of fire destroying structures and surrounding vegetation, and causing air pollution, and solid waste pollution from fire debris	• Prepare emergency preparedness and response plan • Training in emergency response as per plan	Meetings and site visits	ASA, TARI, ADC TAFICO, ZAFICO	EPRP in place Training records	EPRP in place within a month of start up Subsequently biannual monitoring	Included in Programme implementation and routine operating costs
Overfishing from DSF vessels and due to use of FADs	• Strengthen data reporting and monitoring • Develop and implement deep sea tuna fishing management strategies • Control and monitor use of FADs	Meetings and site visits; consultations with artisanal fishers and coastal communities	DSFA TAFICO, ZAFICO MLF, MANRLF	Catch records	Quarterly	Included in Programme implementation and routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
	• Develop FAD management strategies • Limit use of FADs					
Juvenile catch and bycatch of non-targeted species	• Strengthen data reporting and monitoring • Develop and implement deep sea tuna fishing management strategies • Control and monitor use of FADs • Develop FAD management strategies • Limit use of FADs • Use non-entangling and biodegradable FADs	Meetings and site visits; consultations with artisanal fishers and coastal communities	DSFA TAFICO, ZAFICO MLF, MANRLF	Bycatch and catch records	Quarterly	Included in Programme implementation and routine operating costs
Risk of escape of seaweed culture to open sea	• Prepare biologically coupled hydrodynamic models to support the assessment of risk, understand carrying capacity of water bodies and select suitable sites for seaweed cultivation • Seaweed farm management practices to enhance biosecurity measures.	Meetings and site visits; consultations with sea weed farmers, artisanal fishers	MANRLF	Monitoring reports	Quarterly	Cost of model TBD Seaweed farm management part of routine operation costs
Social/Socio-Economic Risks and Impacts						
Irrigation, aquaculture resulting in reduced availability of water for other ongoing and planned developments, causing conflict between communities and project interventions	• Ensure community water sources are not compromised • Establish grievance redress mechanism to deal with conflicts	Meetings and site visits; consultations with farmers and surrounding communities	ASA, TARI, ADC Water Basin Offices	Water abstraction records Complaints received and resolved	Monthly	Routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
Competition for water sources with community sources						
Poor application and handling of agrochemicals: touching, inhaling or ingesting toxic chemicals leading to dermatological or gastric ailments, or poisoning.	• Develop agrochemical management system and IPMP describing handling, storage, use and disposal of all agrochemicals used on the schemes. • Train farmers in the handling, safe storage, application and disposal of all agrochemicals.	Meetings and site visits; consultations with farmers and surrounding communities	ASA, TARI, ADC PHS, PPD	Agrochemical Management System documentation IPMP prepared Training records Records of agrochemicals stored and applied	AMS and IPMP in place at start up Subsequently quarterly monitoring	Included in Programme implementation and routine operating costs
Poor treatment application methods and improper storage leading to proliferation of aflatoxins and resulting health effects on community	• Remove sources of contamination, promoting better agricultural and storage techniques (control moisture, temperature, and aeration) • Ensure adequate resources are available for testing and early diagnosis, and enforcing strict food safety standards, • Sensitisation of farmers and consumers about risks of aflatoxins • Create general awareness about personal protection • Chemical decontamination or use of enterosorbents for contaminated grains	Meetings and site visits; consultations with farmers and surrounding communities	ASA, TARI	Site visit reports Records of sensitisation provided to farmers and consumers	Quarterly	Routine operating costs
Encroachment by deep sea and artisanal fishers into marine protected areas or sensitive	Establish buffer zones between marine protected areas and EEZ	Meetings and site visits; consultations with deep sea crews, fishers, artisanal	DSFA TAFICO, ZAFICO	Incidences reported of encroachment into protected waters	Quarterly	Included in Programme implementation

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
coastal areas affecting marine biodiversity		fishers, and surrounding communities				and routine operating costs
Excessive noise levels from fishing vessel engines, ice making, farm machinery, and value chain processing activities causing workers' and fishers' hearing impairments	• Adhere to guidelines as prescribed in the First Schedule of the Environmental Management (Standards for the Control of Noise and Vibrations Pollution), 2014 • Provide PPE to personnel exposed to excessive noise levels on site such as ear muffs. • Install noise reduction technologies in machinery, generators, etc.	Meetings and site visits; consultations with construction workers, farm workers, fishers and surrounding communities	TAFICO, ZAFICO ASA, TARI	Noise monitoring reports Noise reduction technologies installed and reported in site visit reports	Monthly	Included in Programme implementation and routine operating costs
Emissions from burning e-waste are toxic to humans and animals.	• Avoid burning e-waste • Set up e-waste management procedures. • Agree with suppliers that e-waste from the equipment supplied by them to be taken back by them for recycling/disposal in line with Environmental Management (Hazardous Waste Control and Management) Regulations, 2019 and international best practice. • Establish grievance redress mechanism	Meetings and site visits	TOSCI NEMC	Site visit records Complaints received and resolved	Quarterly	Routine operating costs
Accidents and injuries to workers due to movement of materials into construction sites, as well as construction activities, for processing plants, treatment and storage facilities, workshops, laboratories, etc.	• Provide adequate and appropriate PPE such as safety boots, helmets, gloves, overalls and this should be in keeping with the task and exposure a worker is subjected to • Comply with OSHA requirements and best practice	Meetings and site visits; consultations with construction workers, farm workers, vessel crew and fishers, workers at processing facilities, laboratory personnel	OSHA	EPRP in place Training records	EPRP in place within a month of start up Subsequently quarterly monitoring	Included in Programme implementation and routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
Accidents and incidents, electrocution, from handling machinery and working with electrical systems, during operation/implementation in buildings and on vessels	• Provide training to all relevant personnel in necessary OHS requirements to ensure their safety • First Aid Kit must be kept on the site and modestly stocked with necessities for any emergencies. • Prepare an Emergency Preparedness and Response and Evacuation Plan • Train all personnel in emergency response					
Conflicts in use of coastline for seaweed vs tourism and other activities using same resources	• Consultations between seaweed farmers, tourism operators, government offices and other key stakeholders to agree on how to use/share beach area. • Establish grievance redress mechanism to deal with conflicts • Develop Marine Spatial Plan designating specific zones for specific activities along coastline.	Meetings and site visits; consultations with sea weed farmers, artisanal fishers, tourism stakeholders	PCU Department of Fisheries of MANRLF	Records of consultations Complaints received and resolved	Quarterly	Routine operating costs MSP cost TBD
Women may be marginalised from participating in seaweed cultivation if access to training is limited and if technologies make it difficult for women (eg if seaweed is to be grown in deeper water)	• Continuous consultations and dialogue between project implementors and potential women participants/ beneficiaries to establish how to overcome some of these difficulties.	Meetings and site visits; consultations with women and youth targeted for seaweed farming	PCU Department of Fisheries of MANRLF	Consultation records	Quarterly	Included in Programme implementation costs
Gender based violence (GBV) i.e. transactional sex (fish for sex) and Intimate Partner Violence, child labour	• Create awareness on prevention, handling and referral for all forms of GBV and child labour – integrated in the project activities	Meetings and consultations	PCU, all Programme entities	Consultation records	Quarterly	Included in Programme implementation and routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
Retrogressive social norms prevent women and youth from participating and benefitting from project activities	• Use of GALS methodology and or other gender participatory methodologies to empower women and make women's roles, needs and aspirations visible; and sensitizing smallholder farmers, women, men and youth to increase their participation • Increasing women's access to knowledge, skills, inputs and finance through training, matching grants, exposure visits and GALS fairs • Increasing women and youth's visibility as actors in the value chains through representation quotas	Community dialogue and household focused interventions	PCU, all Programme entities	Consultation records	Quarterly	Included in Programme implementation and routine operating costs
Inequitable labour and working conditions.	• Ensure labour and working conditions are in line with national labour laws and ILO core conventions: equal pay, non-discrimination	Meetings and site visits	PCU Ministry of Labour and Employment (TZ), Ministry of Labour, Empowerment, Elderly, Youth, Women and Children (ZNZ)	Work/employment contracts	Quarterly	Routine operating costs
Inadequate consultation of various stakeholders, particularly with vulnerable and disadvantaged members of the communities may result in reduced uptake of linkages, promoted varieties, attendance at field schools, enhanced marketing, value chain interventions	• Carry out continuous, extensive and inclusive consultations with stakeholders, particularly vulnerable and disadvantaged groups, during entire project period • Set up and disseminate Grievance Redress Mechanism which should be accessible to all stakeholders	Meetings and consultations	PCU, all Programme entities	Consultation records	Quarterly	Included in Programme implementation and routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
Risk of fire on spreading to neighbouring premises, and causing injury/fatalities to workforce and neighbours. Risk of fire from onboard vessel activities causing injury/fatalities to crew and fishers	• Prepare emergency preparedness and response plan • Train all workers, crews and fishers in fire response	Meetings and site visits; consultations with construction workers, farm workers, crew and fishers and surrounding communities	ASA, TARI, ADC TAFICO, ZAFICO	EPRP in place Training records	EPRP in place within a month of start up Biannual monitoring	Routine operating costs
Failure of reservoir structure causing hazard risk to workers on site and surrounding communities	• Prepare emergency preparedness and response plan • Train all workers, and community leaders/representatives in hazard response procedures.	Meetings and site visits; consultations with farm workers and surrounding communities	ASA, TARI, ADC	EPRP in place Training records	EPRP in place within a month of start up Biannual monitoring	Routine operating costs
The COVID-19 pandemic may affect output and earnings as a result of restrictions on imports of tuna and processed seaweed imposed by target countries, or disruptions in transportation modes resulting in spoilt goods.	• Ensure guaranteed markets	Consultations with target markets and entities	MANRLF TAFICO, ZAFICO	Signed agreements/ contract agreements to buy seaweed and tuna	In place prior to tuna fisheries and seaweed subcomponents begin	Included in Programme implementation costs
Climate Risks and Impacts						
Pests and disease outbreaks, including locusts, fall army worm, fish diseases	• Establish early warning systems • FOs to be trained in accessing climate early warning systems • Encourage FOs to develop alternative livelihood means through safety nets • Develop and implement IPMP	Meetings and site visits; consultations with farm workers and surrounding communities	ASA, TARI, ADC	Documentation on Early Warning Systems Training records	IPMP in place at start up Subsequently quarterly monitoring	Included in Programme implementation and routine operating costs
Excessive rain, wind or floods may damage project buildings and road and water infrastructure.	• Install and maintain drainage structures to regulate stormwater and runoff/run on	Meetings and site visits	ASA, TARI, ADC	Site visit reports	Quarterly	Routine operating costs

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
Excessive rain, wind or floods may cause severe soil erosion	• Install and maintain drainage structures to regulate stormwater and runoff/run on • Use zero-till/reduced till methods for land preparation	Meetings and site visits	ASA, TARI, ADC	Site visit reports	Quarterly	Included in Programme implementation and routine operating costs
Extreme rainfall affecting ITC, cellular signals for early warning systems	• Back up data	Stakeholder engagements during meetings and site visits	PCU, TOSCI	Back up files	Weekly	Included in Project implementation and routine operating costs
Sea water rise may affect project structures if located to close to the sea, and make seaweed farming difficult	• Careful siting and maintenance of structures based on predicted sea level rise	Meetings and site visits; consultations with sea weed farmers	PCU Fisheries Department of MANRLF	Site visit reports	Quarterly	Included in Programme implementation and routine operating costs
FADs cut loose due to cyclones or severe wave action leading to ghost fishing	• Use of smart FADs include sonar and GPS capabilities so that the operator can remotely contact it via satellite to determine the location if cut loose. • Use of biodegradable materials for FADs • Monitor break away FADs	Meetings and site visits; consultations with artisanal fishers	Fisheries department at Bagamoyo,Kilwa, Mafia and Pangani District Councils	Site visit reports Consultation records Reports of lost FADs	Quarterly	Included in Programme implementation and routine operating costs
Tropical cyclones and inclement seas leading to vessels getting lost, damage to vessels, capsizing.	• Prepare emergency preparedness, response and evacuation plan • Train all crew members and fishers in emergency procedures	Meetings and site visits; consultations with crew and fishers, and emergency response services	TAFICO, ZAFICO DSFA	EPRP in place Training records	EPRP in place within a month of start up Biannual monitoring	Included in Programme implementation and routine operating costs
Droughts / prolonged dry periods leading to water unavailability /scarcity	• Establish early warning systems • FOs to be trained in accessing climate early warning systems	Meetings and site visits; consultations with farm workers and surrounding communities	ASA, TARI, ADC TMA	Documentation on Early Warning Systems Meeting records	Quarterly	Included in Programme implementation

Environmental, Social and Climate Aspects, Risks and Impacts	Recommended Mitigation/Enhancement measures	Public Consultation Activities	Responsible Institution in Implementation Phase	Means of Verification (Monitoring and reporting)	Frequency of Verification	Cost Estimate
	• Encourage FOs to develop alternative livelihood means through safety nets • Establish alternative water supplies, eg. rainwater harvesting, storage facilities for times of spate					and routine operating costs
E-waste releases of GHG	• Avoid burning e-waste • Set up e-waste management procedures. • Agree with suppliers that e-waste from the equipment supplied by them to be taken back by them for recycling/disposal in line with Environmental Management (Hazardous Waste Control and Management) Regulations, 2019 and international best practice.	Meetings and site visits	TOSCI NEMC	Site visit reports	Quarterly	Routine operating costs
Other Risks and Impacts						
Disillusion, distrust as a result of delayed implementation	• Continuous communication with stakeholders at all levels.	Meetings and site visits	PCU	Records of consultations	Quarterly	Included in Project implementation costs
Poor safeguards measures in Procurement	• Ensure procurement of safeguards related studies is done in accordance to IFAD's procurement guidelines	Meetings	PCU, IFAD	Records of meetings	Ensure procurement of safeguards related studies is done in accordance to IFAD's procurement guidelines	Included in Project implementation costs

8 Climate Risk Assessment

8.1 Introduction

Over the last 40 years, Tanzania has experienced increased climate variability and climate change over most parts of the country. Rising temperatures, longer dry spells, more intense heavy rainfall and sea level rise have hindered poverty alleviation and rural development. Extreme events such as floods and droughts are occurring more frequently both within and between seasons. Increasing temperatures have been observed notably over highland areas while late rainfall onset and early cessation, decreasing rainfall amount and seasonal shift in rainfall patterns are becoming more common nationwide.

Selected value chains are highly sensitive to rainfall deficit and rising temperature. Rural populations, most of whom are highly dependent on rain-fed agriculture, are facing prolonged dry spells with a delayed onset and increased intensity of the wet season combined with unpredictability of rainfall, causing crop failure and water stress, and consequently affecting yields. The impact of climate change on fisheries is mainly associated with destruction/degradation of fish nurseries, breeding and feeding areas. The rise of sea surface temperature causes the destruction of coral reefs, which is a critical habitat for fish.

AFDP has been classified as moderately sensitive to climate risks, and therefore falls into the medium risk category. The purpose of this basic climate risk analysis (CRA) is to determine the exposure of the Programme to climate-related risks based on available information about historic climate hazard occurrences, climate change trends and projections.

8.2 Trend and Climate Hazard Analysis

Tanzania is located between latitude 1°S and 12°S and longitude 29 °E to 41 °E. The country has a tropical climate that varies across regions influenced by regional heterogeneity that covers a land area of 885,800 km2 and coastal and marine ecosystems occupying an area of 241,500 km2[25]. In addition, the country's physical features contribute to high local variability in its climate. Its topography ranges from sea level to of 5,895 m (Mount Kilimanjaro), while its lake systems include Lake Victoria, Lake Tanganyika, Lake Rukwa and Lake Nyasa all of which bring with them their own micro-climates. Thus, the country has a complex seasonality influenced by the Western Indian Ocean, Intertropical Convergence Zone (ITCZ), monsoon winds, Congo Air mass and the lakes[26].

This chapter discusses changes in temperature and precipitation patterns in Tanzania mainland and Zanzibar. It investigates both changes in mean temperature and precipitation and their potential impacts on selected crop seed, fisheries and mariculture value chains.

[25] URT (2019). Third Report State of Environment Report, Vice President Office, Dodoma

[26] Luhunga PM, Kijazi AL, Chang'a L, Kondowe A, Ng'ongolo H and Mtongori H (2018). Climate Change Projections for Tanzania Based on High-Resolution Regional Climate
Models From the Coordinated Regional Climate Downscaling Experiment (CORDEX)-Africa. Front. Environ. Sci. 6:122. doi: 10.3389/fenvs.2018.00122

8.2.1 Changes in Temperature

Mean temperature

Tanzania has a wide range of temperatures. Along the coast and in the islands located in the Indian Ocean, the average temperature varies between 27 °C and 29 °C, while in the central, northern and western parts temperatures range between 20 °C and 30 °C. Temperatures are higher between the months of December and March and coolest during the months of June and July. In the Southern highlands and mountainous areas of the north and northeast, temperature occasionally drops below 15 °C at night, and in the cold months of June and July sub-zero temperatures can also be experienced[27].

Temperature Extremes

The country has experienced severe and recurrent droughts, which have caused devastating impacts, particularly in agriculture, water, energy and livestock sectors. The most recent devastating droughts include those of 2003, 2005, 2011, 2014 and 2016[28] . The severity of drought is exacerbated in the semi-arid regions of Tanzania where estimations show that 61% of land in these areas is likely to be degraded. These areas include some parts of Dodoma, Shinyanga, Manyara, Singida, Simiyu, Geita and Kilimanjaro regions, which are characterized by extreme seasonal conditions with relatively low rainfall, a long dry seasons and high seasonal rainfall and temperature fluctuations[29].

Temperature Projections

The climate models project increases in temperature with high variation from zone to zone. Greater warming is projected over the Western side of the country, whereby a warming of up to 3.4^0C is projected by 2100. A warming of less than 1.76 ^{0}C for 2050 and 3.28 ^{0}C for 2100 is projected over parts of the northern coast regions and north-eastern highlands. A warming in excess of 1.77 ^{0}C for 2050 and 3.3 ^{0}C for 2100 is projected over the Lake Victoria zone and central Tanzania zone. A warming in excess of 1.39 ^{0}C for 2050 and 3.18 ^{0}C for 2100 are projected for the southern coast including Mtwara and Lindi regions. The figures below depict climate timeline (1971-2000) against expected projections for 2011-2040 (beginning of century), 2041-2071 (mid-century) and 2071-2100 (end of century), under both RCP[30] 8.5 (higher) and RCP 4.5 (lower).

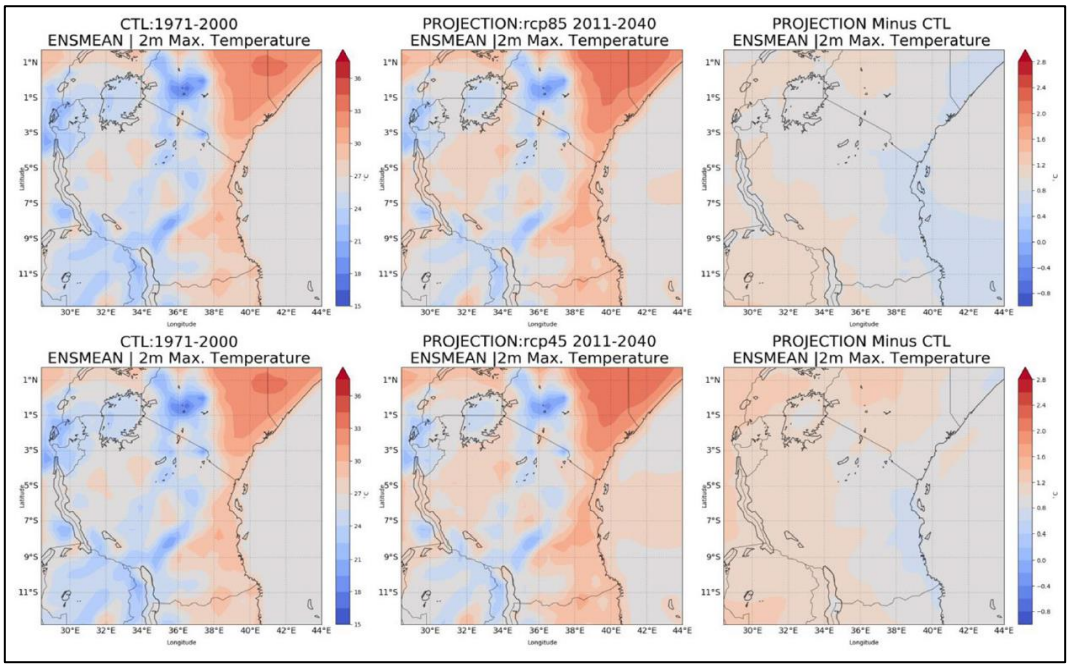
[27] Ibid.

[28] Chang'a, L.B., Kijazi, A.L., Luhunga, P.M., Ng'ongolo, H.K. and Mtongori, H.I. (2017) Spatial and Temporal Analysis of Rainfall and Temperature Extreme Indices in Tanzania. Atmospheric and Climate Sciences, 7, 525-539. https://doi.org/10.4236/acs.2017.74038

[29] URT (2019). Op cit.

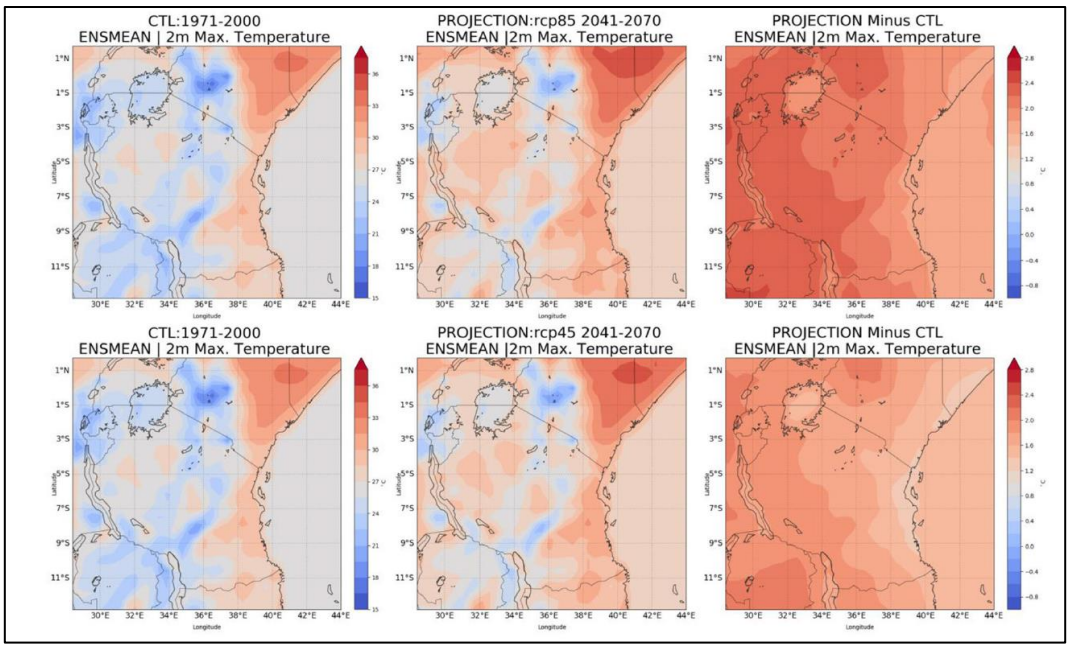
[30] Representative Concentration Pathways (RCPs) refer to scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases (GHGs) and aerosols and chemically active gases, as well as land use/land cover (Moss et al., 2008). The word representative signifies that each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics. The term pathway emphasises that not only the long-term concentration levels are of interest, but also the trajectory taken over time to reach that outcome (Moss et al., 2010). Source: https://www.ipcc-data.org/guidelines/pages/glossary/glossary_r.html (consulted on 09 July 2020). RCPs usually refer to the portion of the concentration pathway extending up to 2100

Figure 8-1: The average of maximum temperature during baseline period (1971–2000), present century (2011–2040), and the change in temperature during present under both RCP 8.5 (upper) and RCP 4.5 (lower)



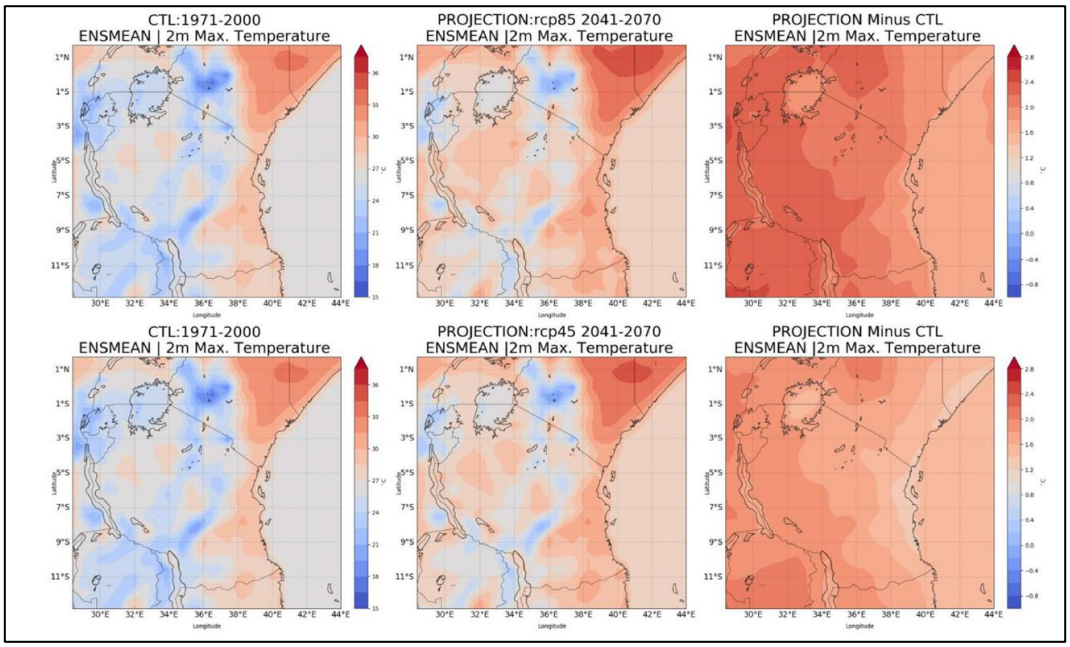
Source: Luhunga et al (2018)

Figure 8-2: The average of maximum temperature during baseline period (1971–2000), mid- century (2041–2070), and the change in temperature during mid-century under both RCP 8.5 (upper) and RCP 4.5 (lower)



Source: Luhunga et al (2018)

Figure 8-3: The average of maximum temperature during baseline period (1971–2000), end century (2071–2100), and the change in temperature during end century under both RCP 8.5 (upper) and RCP 4.5 (lower)



Source: Luhunga et al (2018)

8.2.2 Changes in precipitation

This section investigates three essential aspects of precipitation in relation with crop seed production and fisheries, including aquaculture and mariculture: precipitation depth and its variability as well as the occurrence of extreme wet precipitation events (ie. flash floods and floods).

Precipitation Depth and Variability

Precipitation in Tanzania is highly variable in both space and time due to topographical variations, coastal influences, and the presence of lakes. As result, Tanzania experiences two types of rainfall patterns, bimodal and unimodal rainfall patterns, influenced by the Intertropical Convergence Zone (ITCZ), which move southwards in October and reaches the southern parts of the country in January or February and reverse Northwards in March, April and May. Hence, regions in the central, southern and western parts are characterised by a unimodal rainfall pattern that starts in October and stops in April or May. Regions in the North, Northern coast, North-eastern highlands, Lake Victoria basin and the Island of Zanzibar receive two distinct seasonal rainfalls, the short rainfall season (Vuli) that starts in October and continues through December (OND) and the long rain season (Masika) that starts in March and continues through May. The annual rainfall total varies between 200 to 1000 mm over most parts of the country. Annual and seasonal precipitation trend analyses from 1961 to 2016 show maximum rainfall decline in Tanzania during the long rainy season (March–May), and an increasing precipitation trend in northwestern Tanzania during the short rainy season (September–November)[31].

[31] URT (2019). Op cit.

Precipitation Extremes

Higher amounts of rainfall are recorded over the Southwestern and North eastern highlands. The most recent severe floods include those of 2006, 2009, 2010, 2011, 2012, 2014, 2016 and 2017 that affected many parts of the country. Above average rainfall occurs during an El Nino events and the reverse during La Nina. The Central zones of Tanzania are considered as semi-arid regions with annual rainfall of less than 400 mm.

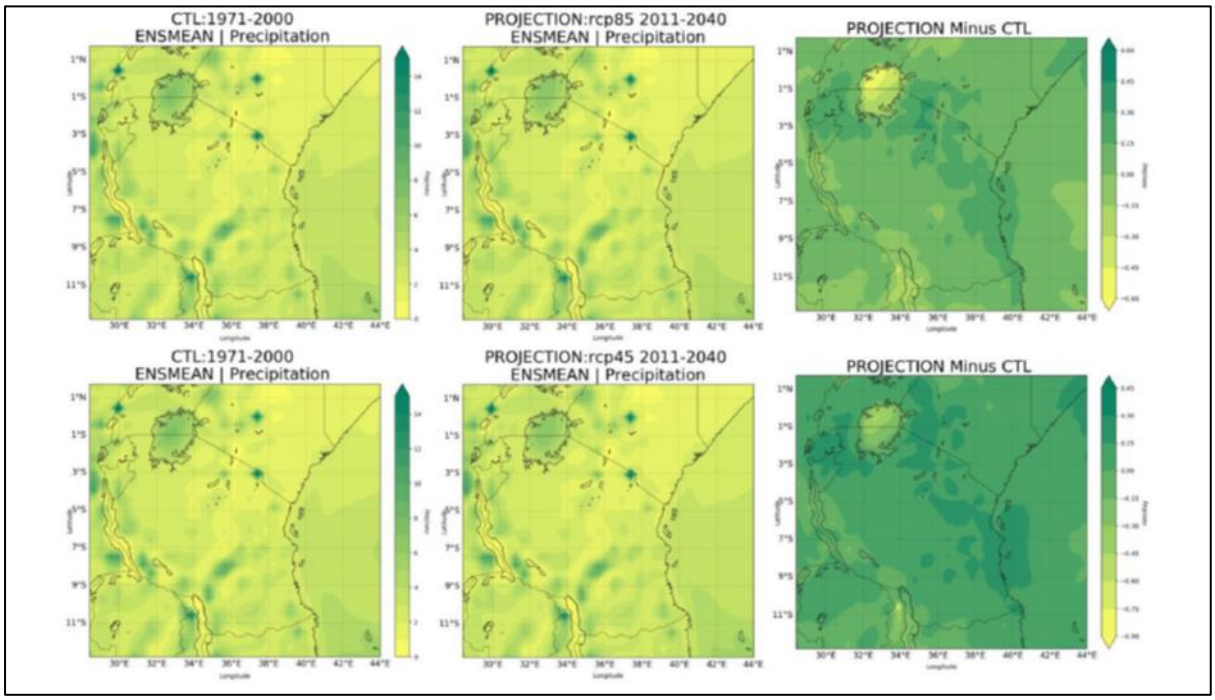
Projections for Rainfall

Climate projections for Tanzania predict increased rainfall in most parts of the country, especially over coastal regions, parts of north-eastern highlands, northern regions, western and southern parts of the Lake Victoria basin where rainfall is projected to increase in the range of 0.15 to 0.45 mm/day. The south-western highlands, eastern parts of Lake Nyasa, and Western regions are projected to experience decreased rainfall in the range of 0.15 to 0.3 mm/day.

Rainfall projections indicate that some parts of the country may experience an increase in mean annual rainfall of up to 18 to 28% by 2100, particularly over the Lake Victoria Basin and North-Eastern Highland (Figure 12-2). An increase of about 10-12% in 2050 and 18.2- 28.3% in 2100 is projected over Lake Victoria Zone. The North Eastern Highlands areas are projected to experience an increase of up to 13.4% in 2050, and 16.3% in 2100. The South Western Highlands and Western Zones of the country are projected to experience an increase in annual rainfall by up to 9.9% in 2050 and by up to 17.7% in 2100. The North Coast Zone is projected to have an increase of about 1.8% in 2050 and 5.8% in 2100 while the Central Zone is projected to have an increase of up to 9.9% in 2050 and up to 18.4% in 2100. The Southern Coast Zone is projected to have a decrease of up to 7% in 2050 and an increase of annual rainfall of about 9.5% in 2100[32]. Below figures are showing precipitation in mm/day during base period (1971–2000), projected rainfall patterns during present century (2011–2040), mid century (2041–2070) and end century (2071-2100) change in precipitation under both RCP 8.5 (upper) and RCP 4.5 (lower).

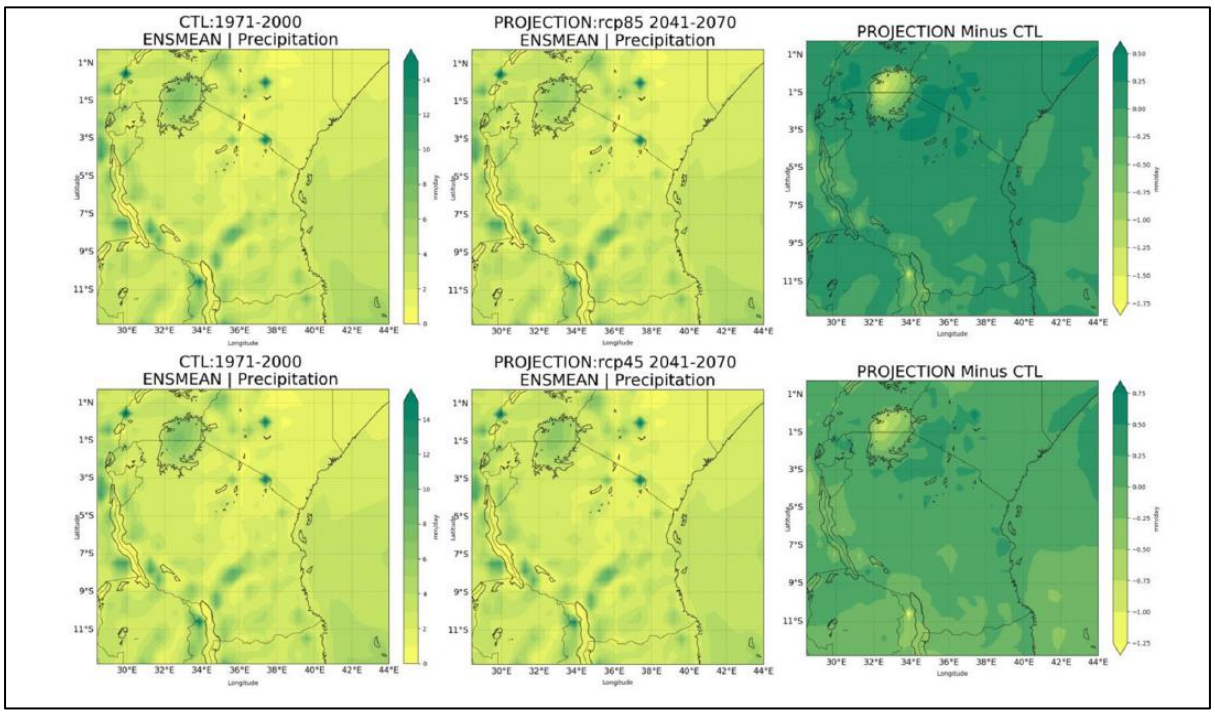
[32] URT (2014). Second national communication to the united nations framework convention on the climate change (UNFCCC), Vice President Office, Dar es Salaam

Figure 8-4: Precipitation in mm/day during baseline period (1971–2000), present century (2011–2040), and change in precipitation under both RCP8.5 (upper) and RCP 4.5 (lower)



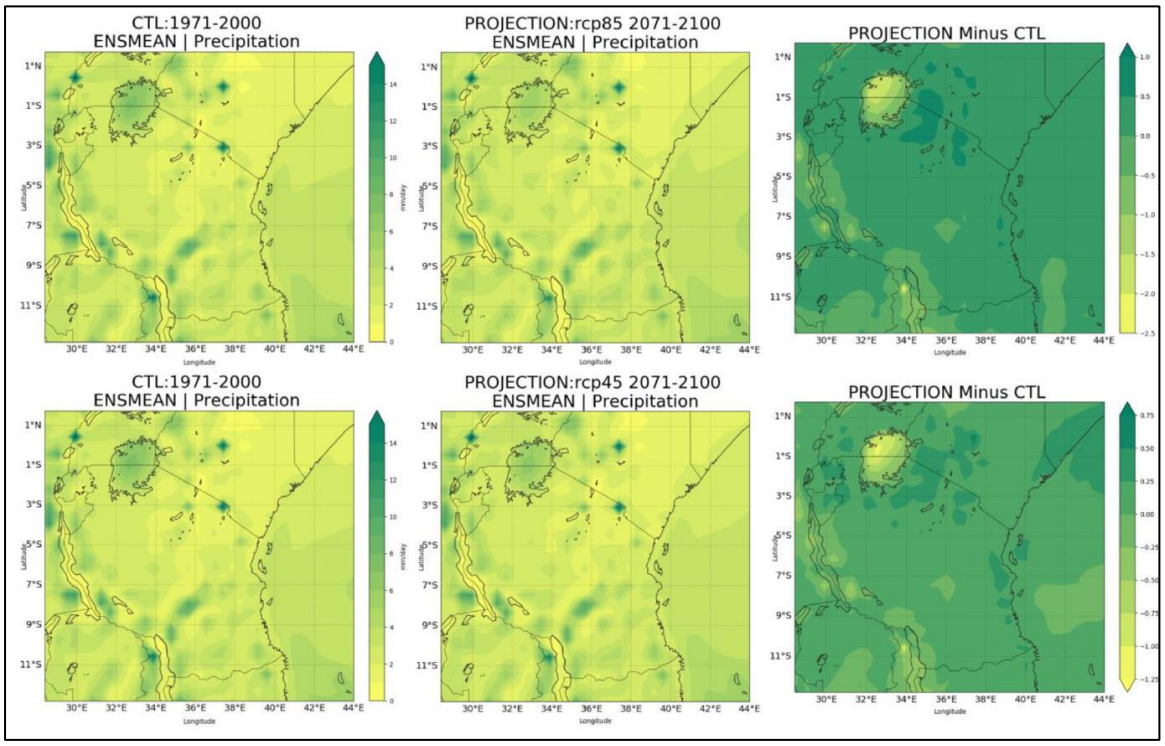
Source: Luhunga et al (2018)

Figure 8-5: Precipitation in mm/day during baseline period (1971–2000), present century (2041–2070), and change in precipitation under both RCP8.5 (upper) and RCP 4.5 (lower)



Source: Luhunga et al (2018)

Figure 8-6: Precipitation in mm/day during base period (1971–2000), present century (2071–2100), and change in precipitation under both RCP8.5 (upper) and RCP 4.5



Source: Luhunga et al (2018)

8.2.3 Coastal and Marine Ecosystems and Related Climate Change Impacts

The Western Indian Ocean (WIO) region is characterized by high diversity in both species and ecosystems and considered as the world's second richest marine biodiversity hotspot. The Intergovernmental Panel on climate Change Fifth Report (IPCC AR 5) highlights that oceans accumulated 90 % of the heat resulting from global warming during the last four decades[33] . During 1901-2012, WIO experienced anomalous warming of up to 1.2 °C, compared to an increase of 0.7 °C in other parts of the Indian Ocean. The sea surface temperatures (SST) in the WIO increased at a rate faster than any other region of tropical oceans, with notably an increase of 0.60 °C from 1950 to 2009. Projected changes include an additional increase of 1° C by 2100.

Furthermore, sea level along all Indian Ocean coasts has increased since 1960s with an average of 12.9 cm, except for Zanzibar that shows a decrease. The situation is also exacerbated by increases in tropical cyclones, storm surges and flooding that are aggravated by unpredictable heavy rainfall over the land[34]. In particular, threats to coastal livelihoods consist of coral bleaching, general decrease in coral cover and changing coral communities. The effects of sea level rise include increased sedimentation and influences on coastal fish species due to the loss of intertidal areas which act as important nursery areas for both resident and migratory species.

Overharvesting and clearing for agricultural use or coastal development have significantly affected mangrove forests, which has declined by 20 % to 30 % over the past few decades. The loss of mangrove forests has led to decreased estuarine biodiversity and shoreline protection from extreme weather

[33] Roxy & al. (2014). The curious case of Indian Ocean Warming, American Meteorological Society, 8501-8509
[34] Van der Lingen and Hampton I. (2018). Chapter 11: Climate Change impacts, vulnerabilities and adaptations: Southeast Atlantic and southwest Indian Ocean Marine Fisheries; within FAO, 2018, Impacts of climate change on fisheries and aquaculture Synthesis of current knowledge, adaptation and mitigation options.

events and increased sedimentation and erosion, which have negative impacts on seaweed farming taking place in shallow intertidal areas.

Furthermore, climate change is expected to affect the marine environment extensively by modifying the physical and chemical properties of seawater, including temperature, salinity, current, vertical stratification and oxygen concentration[35].

8.3 Main Findings for Targeted Value Chains

8.3.1 Crop Seed Production

With regard to the three selected crop seed value chain (maize, beans and sunflower), changes in climatic characteristics may affect their yields. While increasing temperatures may benefit rain-fed maize production in the highland, maize production is sensitive to daytime high temperatures above 30 °C. Heat stress during flowering and grain filling stages results in decreased grain count and weight, resulting in low crop yield and quality. With elevated temperature (above 35 °C), it is expected that maize will not only suffers from temperature stress, but also becomes sensitive to moisture availability. Rain-fed agriculture combined with potential variations in rainfall distribution under climate change may not be able to meet increasing water demand[36]. Hence, maize seed production in semi-arid areas of central zones of Tanzania is likely to face a decrease in yield of 8-13% by 2050 due to increased heat stress, drying, soil erosion and land degradation. In semi-arid areas, water and heat stress are projected to temporally decrease the length of the growing season while spatially shrinking the suitable areas for agricultural production.

With regard to bean production, similar trends are expected with yield decreases of 5-9% by 2050[37]. The negative effects of climate change on beans production are rainfall variability and soil moisture content rather than rising temperature. Based on climate change scenarios, estimations of suitable areas indicate that lowland areas may lose up to 20% of the current beans production but highland areas may gain up to 57% in bean productivity by the middle of the century[38] .

Furthermore, climate change is likely to reduce yields in sunflower seed production, which is sensitive to dry spells and droughts. Under current climate conditions and with the application of optimum nutrient, pest and disease management options, farmers can achieve yields of 3-4 tonnes per ha. Based on climate change scenarios, yields may drop to 2-3 tonnes per ha[39] .

8.3.2 Aquaculture

For inland small-scale aquaculture systems, increasing seasonal and annual variability in precipitation and resulting flood and drought extremes are likely to be the major threats to aquaculture development. In addition, reduced annual rainfall and changes may lead to potential conflict with other agricultural, industrial and domestic users in water-scarce areas. It expected that smaller ponds

[35] Gruber, N., 2011, Warming up, turning sour, losing breath: ocean biogeochemistry under global change. Philosophical Transactions of the Royal Society A, 369(1943): 1980–1996.
[36] Adhikari U., Nejadhashemi A. Pouyan & Woznicki S. A. (2015) Climate change and eastern Africa: a review of impact on major crops, Food and Energy Security 2015; 4(2): 110–132
[37] USAID, 2018, Climate change in Tanzania, Country risk profile. This document was prepared under the Climate Change Adaptation, Thought Leadership and Assessments (ATLAS).
[38] Adhikari et al (2015). Op cit.
[39] Groot A. D. & al, 2019, Sunflower in Tanzania, Climate change risks and opportunities, Wageningen Environmental Research. The assessment was carried out in the context of the Climate Resilient Agribusiness for Tomorrow (CRAFT) project.

might retain less water and dry up faster. Hence, small-scale farmers may suffer from shortened growing seasons and reduced harvests of inferior fish. The decreasing water levels stimulate early maturation and spawning of some important farmed species, resulting in over-crowding, loss of economic returns and a narrower choice of species for aquaculture[40] .

8.3.3 Fisheries

The main impacts of climate change on Tanzanian fisheries are the destruction or degradation of fish spawning and nursery grounds, and feeding areas. Rising sea surface temperature and ocean acidification are considered as major threats to coral reefs. However, coral reefs may have the capacity to adapt to changing temperatures more quickly than expected by changing their species composition rather than disappearing. This will also affect associated fish fauna that will change towards more generalist species.

During the last two decades, due to El Nino events, WIO experienced three major warming events (1982/83, 1997/98 and 2015/16) that devastated the health of coral reefs and fish communities. For instance, the anomalously high sea temperature of 1997/98 led to mortality of 50 % to 90 % of coral and coincided with low primary production in the WIO and a shift in Tuna stocks[41]. As a result, 62% of fish species declined in abundance within three years after a loss of more than 10 % of coral cover. In addition, increased acidity in the ocean may cause dramatic changes to phytoplankton and hence reduce WIO primary productivity. Scientists stress that largescale distribution of the dominant species of tunas is associated with phytoplankton availability and abundance. It is expected that further changes will put additional stress on fisheries resources.

8.3.4 Seaweed Farming

In late 1980s, seaweed farming was introduced in Tanzania with two main species, *Eucheuma denticulatum (spinosum)* and *Kappaphycus alvarezii (cottonii)*, both native to the Western Indian Ocean region. To a large extent, seaweed is cultivated at smallscale level. Despite higher production of *E. spinosum*, *E. cottonii* fetches a higher price but its production has been declining substantially over the last decade, due to increasing sea surface temperatures and longer hot seasons[42]. Farmers have experienced serious problems of die-off and ice-ice diseases resulting into decreased production. However, the canopies of farmed seaweeds have the potential to reduce wave energy and hence may serve as live coastal protection structures buffering against coastal erosion. By nature, seaweed species are strongly autotrophic, generating far more organic matter through photosynthesis than consumed by respiration in the ecosystem, and are thus responsible for much of CO2 capture in marine vegetated habitats[43] .

[40] Handisyde, N.T. et al. 2006. The effects of climate change on world aquaculture: a global perspective. Final Technical Report, DFID Aquaculture and Fish Genetics Research Programme, Stirling Institute of Aquaculture, Stirling, U.K.

[41] Moustahfid H, Marsac F., Gangopadhyay A., 2018, Chapter 12: Climate change impacts, vulnerabilities and adaptations: Western Indian Ocean marine fisheries, within FAO, 2018, Impacts of climate change on fisheries and aquaculture Synthesis of current knowledge, adaptation and mitigation options.

[42] Duarte CM, Wu J, Xiao X, Bruhn A and Krause-Jensen D (2017) Can Seaweed Farming Play a Role in Climate Change Mitigation and Adaptation? Front. Mar. Sci. 4:100. doi: 10.3389/fmars.2017.00100

[43] Ibid.

9 Environmental, Social and Climate Change Management for AFDP

9.1 Institutional Framework for Environmental Management in Tanzania Mainland

The institutional arrangement for environmental management in Tanzania Mainland is well spelt out in the Environmental Management Act (EMA), 2004. There are seven (7) institutions are mentioned by the Act, of which the Minister Responsible for the Environment is the overall in-charge for administration of all matters relating to the environment.

Part III, Section 13(1) of EMA (2004) states that the Minister responsible for environment shall be in overall in charge of all matters relating to the environment and shall in that respect be responsible for articulation of policy guidelines necessary for the promotion, protection and sustainable management of environment in Tanzania.

The legal institutions for environmental management in the country include:

- National Environmental Advisory Committee;
- Minister responsible for Environment;
- Director of Environment;
- National Environment Management Council (NEMC);
- Sector Ministries;
- Regional Secretariat;
- Local Government Authorities (Municipal, District, Township, Ward, Village, sub-village "Mtaa and Kitongoji")

National Environmental Advisory Committee

The National Advisory Environmental Committee is comprised of members with experience in various fields of environmental management in the public and private sector and in civil society. The committee advises the Minister on any matter related to environmental management. Other functions include:

- Examine any matter that may be referred to it by the Minister or any sector Ministry relating to the protection and management of the environment;
- Review and advise the Minister on any environmental plans, environmental impact assessment of major projects and activities for which an environmental impact review is necessary;
- Review the achievement by the NEMC of objectives, goals and targets set by the Council and advise the Minister accordingly;
- Review and advise the Minister on any environmental standards, guidelines and regulations;
- Receive and deliberate on the reports from Sector Ministries regarding the protection and management of the environment;
- Perform other environmental advisory services to the Minister as may be necessary.

Minister Responsible for Environment

The Minister is responsible for matters relating to environment, including giving policy guidelines necessary for the promotion, protection and sustainable management of the environment in Tanzania. The Minister approves an ESIA and may also delegate the power of approval for an ESIA to the Director of Environment, Local Government Authorities or Sector Ministries. The Minister also:

- Prescribes (in the regulations) the qualifications of persons who may conduct an EIA;
- Reviews NEMC reports on the approval of an EIA;
- Issues an EIA certificate for projects subject to an EIA;
- Suspends an EIA certificate in case of non-compliance.

Director of Environment

The Director of Environment heads the Office of the Director of Environment and is appointed by the President of the United Republic of Tanzania. The functions of the Director of Environment include:

- Coordination of various environmental management activities undertaken by other agencies;
- Promotion of the integration of environmental considerations into development policies, plans, programmes, strategies, projects;
- Undertaking strategic environmental risk assessments with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of quality of human life in Tanzania;
- Advise the Government on legislative and other measures for the management of the environment or the implementation of the relevant international environmental agreements in the field of environment;
- Monitoring and assessing activities undertaken by relevant Sector Ministries and agencies;
- Preparation and issuing of reports on the state of the environment in Tanzania through relevant agencies;
- Coordination of issues relating to articulation and implementation of environmental management aspects of other sector policies and the National Environment Policy.

National Environment Management Council (NEMC)

The NEMC's purpose and objective is to undertake enforcement, compliance, review and monitoring of EIA's and to facilitate public participation in environmental decision-making. According to the Environmental Management Act (2004) the NEMC has the following responsibility pertaining to EIA in Tanzania:

- Registers experts and firms authorized to conduct EIA;
- Registers projects subject to EIA;
- Determines the scope of the EIA;
- Set-ups cross-sectoral Technical Advisory Committee (TAC) to advise on EIA reviews;
- Requests additional information to complete the EIA review;
- Assesses and comments on EIA, in collaboration with other stakeholders,
- Convenes public hearings to obtain comments on the proposed project;
- Recommends to the Minister to approve, reject, or approve with conditions specific EIS;
- Monitors the effects of activities on the environment;
- Controls the implementation of the Environmental Management Plan (EMP);
- Makes recommendations on whether to revoke EIA Certificates in case of non-compliance;
- Promotes public environmental awareness;
- Conducts Environmental Audits (special audits).

Sector Ministries

In the existing institutional and legal framework, the Sector Ministries are required to establish Sector Environmental Sections headed by the Sector Environmental Coordinator. The Sector Ministries' Environmental Sections are required to:

- Ensure environmental compliance by the Sector Ministry;

- Ensure all environmental matters falling under the sector ministry are implemented and report of their implementation is submitted to the DoE;
- Liaise with the DoE and the NEMC on matters involving the environment and all matters with respect to which cooperation or shared responsibility is desirable or required;
- Ensure that environmental concerns are integrated into the ministry or departmental development planning and project implementation in a way which protects the environment;
- Evaluate existing and proposed policies and legislation and recommend measures to ensure that those policies and legislation take adequate account of effect on the environment;
- Prepare and coordinate the implementation of environmental action plans at national and local levels;
- Promote public awareness of environmental issues through educational programmes and dissemination of information;
- Refer to the NEMC any matter related to the environment;
- Ensure that sectoral standards are environmentally sound;
- Oversee the preparation of and implementation of all EIA's required for investments in the sector;
- Ensure compliance with the various regulations, guidelines and procedures issued by the Minister responsible for the environment and;
- Work closely with the ministry responsible for local government to provide environmental advice and technical support to district level staff working in the sector.

Regional Secretariat

The Regional Secretariat, which is headed by the Regional Environmental Management Expert, is responsible for the co-ordination of all environmental management programmes in their respective regions. The Regional Environmental Officer:

- Advises local authorities on matters relating to the implementation of and enforcement of environmental laws and regulations;
- Creates a link between the region and the DoE and the Director General of the NEMC.

Local Government Authorities

Under the Local Government Act of 1982 (Urban and District Authorities), Local Government Authorities include the Municipal Councils, District Councils, Town Councils, Township, Ward, Mtaa and Village. The Environmental Management Committee of each jurisdiction:

- Initiates inquiries and investigations regarding any allegation related to the environment and implementation of or violation of the provisions of the Environmental Management Act;
- Requests any person to provide information or explanation about any matter related to the environment;
- Resolves conflicts among individual persons, companies, agencies non-governmental organizations, government departments or institutions about their respective functions, duties, mandates, obligations or activities;
- Inspects and examines any premises, street, vehicle, aircraft or any other place or article which it believes, or has reasonable cause to believe, that pollutant or other articles or substances believed to be pollutant are kept or transported;
- Requires any person to remove such pollutants at their own cost without causing harm to health and;
- Initiates proceedings of civil or criminal nature against any person, company, agency, department or institution that fails or refuses to comply with any directive issued by any such Committee.

Under the Environmental Management Act (2004), the City, Municipal, District and Town Councils are headed by Environmental Inspectors who are responsible for environmental matters. The functions of the inspectors are to:

- Ensure enforcement of the Environmental Management Act in their respective areas;
- Advice the Environmental Management Committee on all environmental matters;
- Promote awareness in their areas on the protection of the environment and conservation of natural resources;
- Collect and manage information on the environment and the utilization of natural resources;
- Prepare periodic reports on the state of the local environment;
- Monitor the preparation, review and approval of EIA's for local investors;
- Review by-laws on environmental management and on sector specific activities related to the environment;
- Report to the DoE and the Director General of the NEMC on the implementation of the Environmental Management Act and;
- Perform other functions as may be assigned by the local government authority from time to time.

9.2 Institutional Framework for Environmental Management in Zanzibar

Environmental Management is the responsibility of Zanzibar's Department of Environment (DoE) at 1st Vice President's office. The framework legislation which governs environmental management in Zanzibar is The Zanzibar Environmental Management Act, 2015 with its Environmental Impact Assessment Regulation, 2017.

The Zanzibar Environmental Management Act of 2015 states that: "No person shall undertake any activity which is likely to have a significant impact on the environment without an EIA certificate issued under this Act. No licensing institution shall issue a licence, permit, certificate, or other form of approval for an activity which is likely to have a significant impact on the environment unless an EIA certificate has been issued for the activity"

The Zanzibar Environmental Management Authority (ZEMA) is the central EIA authority in Zanzibar. Its responsibility is to manage and regulate EIA requirements and procedures in accordance with the provisions of the Zanzibar Environmental Management Act.

Other public institutions involved in the EIA and their roles is as follows:

i. Zanzibar Investment Promotion Authority is especially involved in foreign investment projects;
ii. Zanzibar Commission for Tourism is involved in local entrepreneur projects;
iii. Institute of Marine Sciences: This institution assists with scientific studies;
iv. Stone Town Conservation and Development Authority depends on the Department of Environment for advice on prevention of degradation of UNESCO sites;
v. Local Government Authority assists in public hearing phases and in signalling problems in communities;
vi. Department of Forestry assists with reports for relevant projects;
vii. Department of Land and Registration deals with all issues related to land use and title deeds;
viii. Department of Fishery and Marine Products assists in issues related to fisheries.

9.3 National EIA Procedures

9.3.1 EIA Procedure in Tanzania Mainland

Section 81 of the Environmental Management Act of 2004 requires all developers of projects identified in the 3rd Schedule of the Act and detailed in the 1st Schedule of the EIA and Audit Regulations of 2005, to undertake Environmental Impact Assessment (EIA). Amendments made to the EIA and Audit Regulations of 2018 introduced three categories of projects i.e. Type A, B1 and B2.

Procedures for carrying out EIAs for Type 'A' Projects

There are seven key steps to be followed in the EIA process in Tanzania for Type 'A' Projects. These are:

Step 1: Registration: The proponent is required to register the proposed project with NEMC, by submitting an application for the EIA certificate by filling in a 'Environmental Assessment Registration Form' and pay registration fees. Along with registration forms the proponent submits Scoping Report and Terms of Reference (TORs) for conducting the Environmental Impact Assessment (EIA) for review and approval before the commencement of the EIA study.

Step 2: Screening: Upon receiving the registration forms and scoping report with Terms of Reference, NEMC reviews the report and approve or disapprove if not satisfied. NEMC may also require more information or modification of ToR if deemed necessary. If the ToR approved, NEMC allots a registration number and prescribes review fees payable to NEMC according to fees and charges regulations which specify amount of fees depending on the type and size of proposed project.

Step 3: Environmental Assessment: The proponent or his/her registered EIA expert conduct EIA study according to the approved TOR and adhere to the Environmental Management Act of 2004 and The Environmental Impact Assessment and Audit Regulations of 2005 and its amendments of 2018.

Step 4: Review**:** The proponent or his/her Consultant submits an Environmental Impact Statement (EIS) to NEMC for review by a Cross-sectoral Technical Advisory Committee (TAC). Prior to the review by TAC, NEMC and key stakeholders from other sectors (depending on the type of project) may visit the proposed site for verification of issues that have been raised on the EIS and confirmation of stakeholder consultation at the proponent's costs (transport arrangements to be done by the proponent). The Council shall, within 60 days following submission of EIS carry out its review as per Section 87(1) of Environmental management Act, 2004.

Step 5: Recommendations of the Technical Advisory Committee *(TAC)*: The proponent and his/her Consultant will make improvements of the EIS by incorporating all comments and recommendations raised by the TAC.

Step 6: Submission to the Minister for Environment: The Proponent or his/her consultant submits the improved (final) version of the EIS to NEMC for final scrutiny. NEMC will forward recommendations to the Minister for Environment for final approval.

Step 7: Approval of the EIS**:** Upon signing of the Certificate by the Minister, it will be brought back to NEMC for collection by the proponent. The Minister may approve or disapprove the EIS within 30 days as per Section 92(1) of Environmental Management Act, 2004.

Procedures for carrying out EIAs for Type 'B' Projects

For a Type 'B1' Project as defined in the First Schedule of the EIA and Audit Regulations of 2018, depending on NEMC's decision at screening stage after submission of Scoping report and ToR, if NEMC deems that the project falls under Type 'A' then seven key steps to be followed in the EIA process are as shown above. If NEMC decides that the project falls under type 'B2', and for Type 'B2" projects specified in the First Schedule of the EIA and Audit Regulations of 2018, the following steps are followed:

Step 1: Submission of Detailed Project Brief: The proponent is required to submit 10 printed copies of detailed project brief report to NEMC.

Step 2: Prescription of Review Fees: NEMC prescribes fee payable by the Proponent depending on the size and estimated development project cost of the project in line with Fees and Charges regulations.

Step 3: Submission to the Minister: After payment of prescribed review fees by the proponent, NEMC forwards the report and recommendations to the Minister for Environment for final approval.

Step 4: Approval of the report: Upon signing of the Certificate by the Minister, it will be brought back to NEMC for collection by the proponent. The Minister may approve or disapprove the report within 30 days as per Section 92(1) of Environmental Management Act, 2004.

Appeal and Grievances Redress Procedure

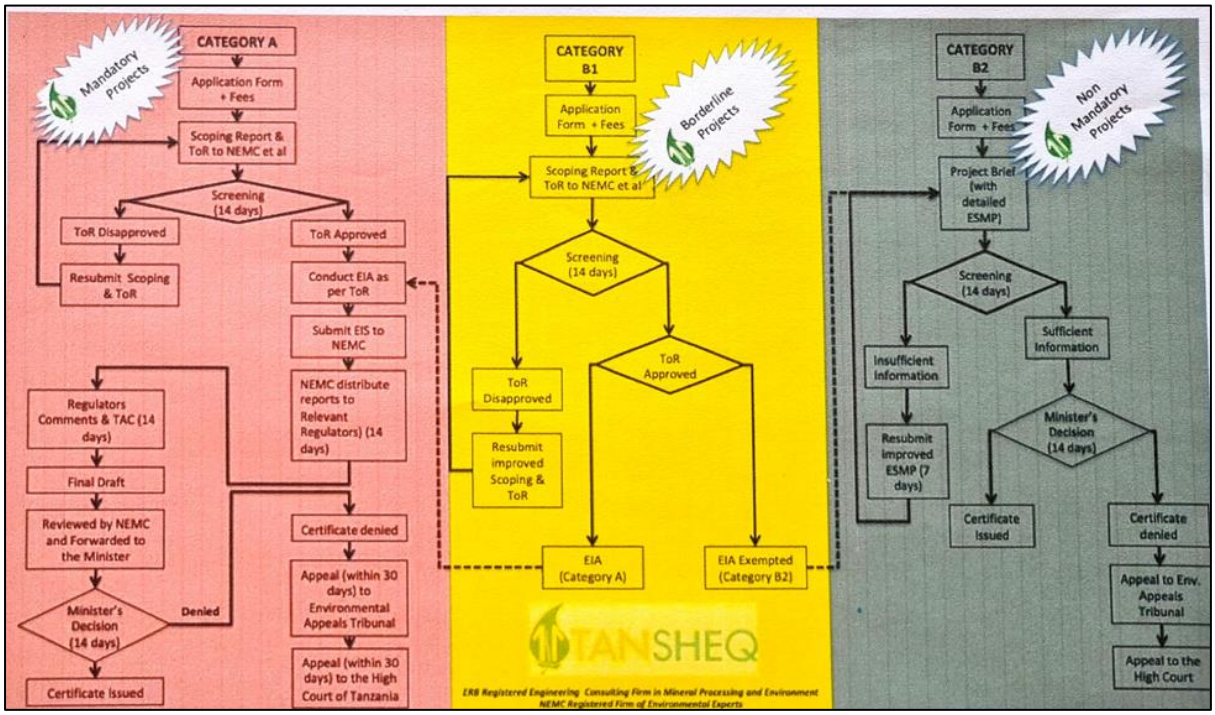
NEMC may disapprove reports submitted by the proponent if they have reasons to do so. If the proponent is aggrieved by such decision may appeal by writing a formal letter to the Minister to seek redress. The Minister upon satisfying himself on the claim brought before him may allow or disallow the EIA process to continue. If the Minister rejects the appeal, the proponent may appeal against this decision by escalating to environmental appeal tribunal according to section 95 of Environmental Management Act, 2004. In case there is no such tribunal formed at the time of appeal, the proponent may file his/her case at the High Court of Tanzania.

Follow Up and Monitoring

During implementation of the project the proponent is required to undertake annual monitoring audit based on the Environmental and Social Monitoring Plan in the approved EIS. A report detailing the results of the annual monitoring exercise is submitted to NEMC for filing. The proponent conducts annual monitoring through a NEMC-registered EIA expert.

The EIA Process is depicted in Figure 9-1 below.

Figure 9-1: EIA Process in Tanzania Mainland



Source: TANSHEQ Ltd, 2020

9.3.2 EIA Procedure in Zanzibar

The Zanzibar Environmental Management Act (ZEMA) makes a screening decision based on a feasibility study for private projects or concept notes for public projects prepared by the proponent, and requests further information if necessary. The proponent is responsible for scoping, preparing Terms of Reference for the EIA, and preparing the Environmental Impact Statement (EIS, or EIA report) while facilitating public participation in the process. ZEMA reviews the EIS and arranges public participation in the review process and makes a decision including approval or disapproval of the EIS. In case of disapproval, the proponent has the right to appeal. In case of approval, an EIA certificate is granted and the proponent can start implementing the project. ZEMA is responsible for monitoring and auditing during implementation, until decommissioning by the proponent.

The EIA procedure followed in Zanzibar is as follows:

Screening: ZEMA is the screening authority. Once the feasibility study or concept note is submitted, it is then reviewed in order to determine the magnitude of the project. ZEMA can then decide if an assessment is required or not; and if required, in what level of an assessment.

Scoping: If the screening indicates that an EIA is required, scoping will be undertaken by the selected expert or firm. This step is crucial because it determines how the EIA study will be carried out. It also identifies and takes into consideration major concerns of stakeholders and identifies likely impacts of the project. The scoping exercise establishes the Terms of Reference and boundary of the EIA Study, which are submitted to ZEMA for approval.

Assessment: Once the ToR are approved, then the EIA study follows. It describes the nature of the project as well as analysing the possible environmental and social impacts of the project or activity together with mitigation measures to minimize the negative impact and enhance the positive ones.

Public Consultation: This should take place during this assessment. Once the EIA study is completed, the proponent, through his/her selected expert or firm, submits 15 hard copies, 15 hard copies of non-technical summary and one soft copy of the report to ZEMA for review.

Review Process: ZEMA circulates the EIA report to the relevant stakeholders to get their views and comments. These stakeholders will submit their views to ZEMA in writing before the review meeting is held. At an agreed date between ZEMA and proponent site verification is done before the review meeting is held. The objective is to become familiar with the project by physically observing the proposed project area, and to confirm what is written in the report. The project proponent will have to pay the fees for site verification, as well as for reviewing the document. Finally, the meeting is held for review of the EIA Report: This is conducted to gain the stakeholder's evaluation of the strengths and weakness of the EIA report, based on the review criteria set by ZEMA. ZEMA is responsible for review of the EIA report and make use of a review committee comprised of representatives of other authorities and ministries who attend the review meeting.

Decision Making: The outcome of the review could be EIA approval, EIA rejection or a request for further information. In case the ESIA report is accepted, the EIA certificate will be issued, with conditions attached. The certificate will be valid for the whole project life span.

Appeal and Grievance Redress Mechanisms

The project proponent can appeal a decision on project approval. If the party disagrees with ZEMA's disapproval of the activity or considers the conditions included in the EIA certificate unfeasible to such an extent that they are equivalent to disapproval of the activity, the following steps should be followed:

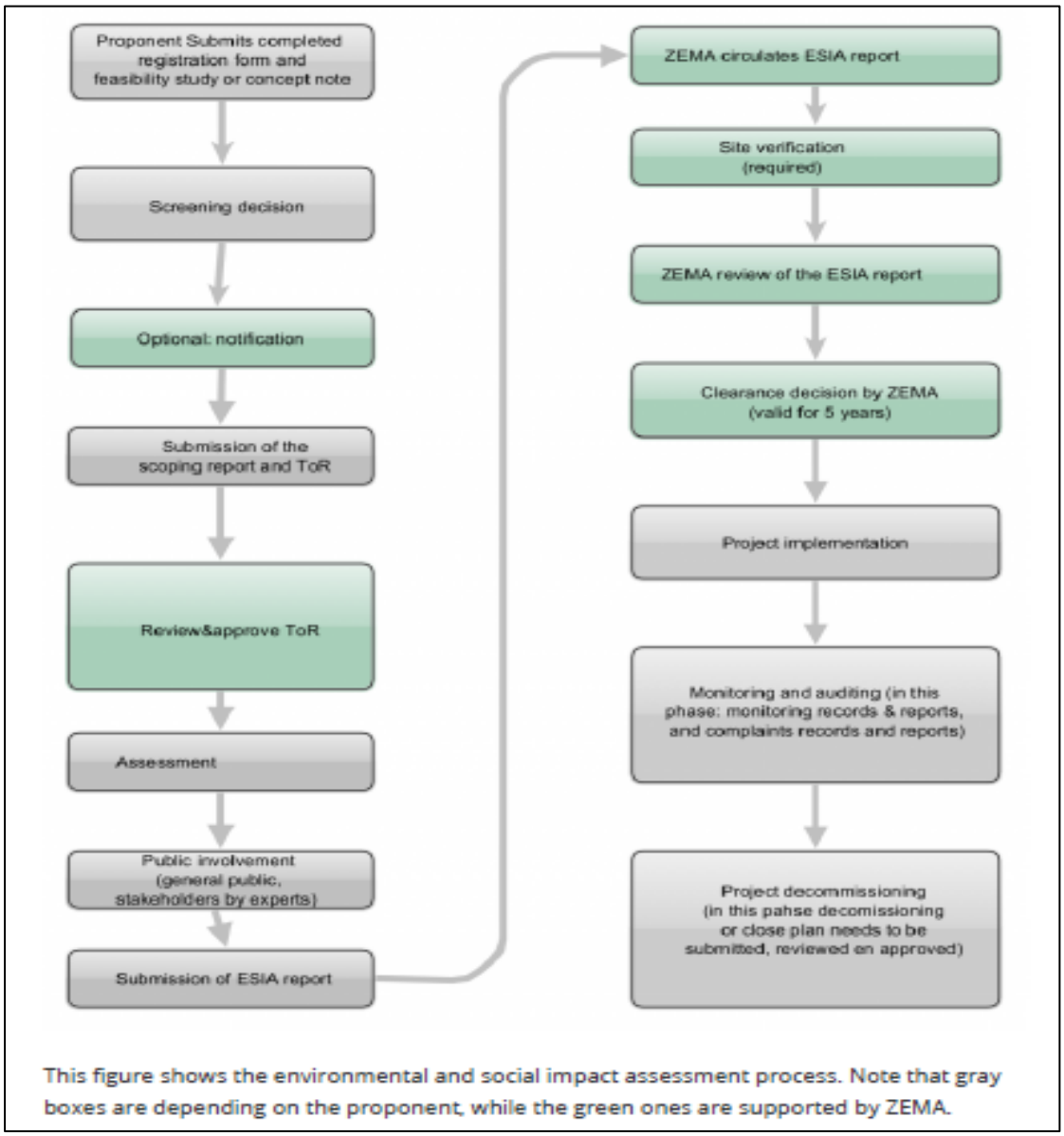
i. Project Proponent wishing to appeal against decision notifies ZEMA within seven (working) days after receipt of the decision;
ii. ZEMA refers the matter to the Minister for decision within fourteen working days after submission, including all information compiled during the application process and ZEMA's recommendation;
iii. The Minister decides whether to approve or disapprove the proposed activity, and may choose to invite public comments and/or take into consideration other national policies as part of this decision-making process;
iv. The Minister states reasons for approving or disapproving the activity and shows that the recommendations and information provided by ZEMA have been used in this decision.
v. If the appealing party is dissatisfied with the Minister's decision, further appeal to the high court of Zanzibar may be sought.

Follow Up and Monitoring

Follow up and monitoring is established under Part IX of the Zanzibar Environmental Management Act No. 3 of 2015 (Section 43). Monitoring is required for all the major projects and programs. Monitoring of the project during implementation phase is conducted by ZEMA in order to ensure compliance and adherence to the approved environmental and social management plan, and to make sure the conditions attached with EIA certificate are fully complied with. However, EIA regulations provide for self monitoring where a proponent undertakes monitoring through registered experts and submits an environmental monitoring report to ZEMA on annual basis.

The EIA process in Zanzibar is illustrated in the figure below:

Figure 9-2: EIA Process in Zanzibar



Source: http://www.minifuss.com/wp/our-services/environmental-certificate/ eia/env_cert_esia/#main

9.3.3 Permitting and Licensing Requirements for AFDP Activities

Tanzania Mainland

There are a number of permits and licences that will be required for the implementation of specific AFDP activities. These include:

- Environmental Impact Assessment Certificate;
- Construction Permit;
- Water User Rights Permit.

Zanzibar

The following permits or documents may be required prior to construction of facilities in Zanzibar:

- Environmental Impact Assessment Certificate,

- Town Planning (TP) Drawing and Survey Plan: required under Land Tenure Act No. 12 of 1992 and issued by Department of Urban and Rural Planning;
- Rights of Occupancy: required under Land Tenure Act No. 12 of 1992 and Title Deed issued by Department of Land Administration;
- Building Permit: required under Municipal Act No. of 1995 and issued by the Municipal Council.

9.4 Environmental, Social and Climate Change Management Procedures for AFDP

The Environmental, Social and Climate Change (ESCC) management procedures for AFDP subprojects will follow the national guidelines and processes as described in the preceding section, as well as IFAD's safeguard requirements as elaborated in SECAP. This section elaborates on those processes to ensure that the environmental and social analysis and monitoring conducted for AFDP subprojects are aligned with IFAD's safeguards requirements.

All AFDP interventions will have to follow the procedures outlined below, including screening, preparation of ESIAs or Project Briefs and other safeguards documentation, review and approvals, disclosure, setting up grievance mechanisms, monitoring, auditing and reporting.

9.4.1 Implementation and Coordination

The institutional arrangements for AFDP implementation as presented in the PDR have been described in Section 2.4, which gives an overview of the roles of the PSC, PTAC, TWG, PCU and PCT. The PCU will include an Environmental, Social and Climate (ESC) Specialist who will report to the Programme Coordinator. Terms of Reference for this specialist are included in Annex 3. The ESC Specialist will work closely with the District Facilitation Teams (DFTs), particularly the District Environment Management Officers (DEMO), the District Agriculture Officers (DAO), the District Fisheries Officers (DFO), and the District Community Development Officers (DCDO), as well as the Regional Environmental Officer.

The implementing agencies for the various Programme activities and interventions are TARI, ASA, ADC, TOSCI, TAFICO and ZAFICO.

Specific responsibilities in relation to environmental and social assessment and monitoring procedures and safeguards requirements are described in the sections.

9.4.2 Screening

The purpose of screening is to provide an initial indication of the nature and complexities of a project, after which it can be categorised to determine the level of investigation necessary to ensure that the project causes no harm to the environment or the project communities, and to ensure that the project is acceptable and sustainable in terms of environmental, social and climate risks and impacts.

SECAP Screening Categorisation of AFDP

According to the SECAP Review Note, AFDP has been categorised as Category A. While most of the proposed interventions will have some significant impacts that can be readily mitigated or remedied and therefore fall into Category B, some activities will have significant environmental impacts which are not easily remedied rendering them Category A. Category B interventions are: crop seed development activities (involving small scale irrigation <100ha, seed testing and certification laboratories and a training centre), mariculture involving a training centre to promote technologies to

improve seaweed farming, and aquaculture ponds. However, the deep sea fisheries and related processing activities may have significant adverse environmental and/or social implications that warrant further investigation. The impacts of tuna fisheries are sensitive not least because a number of tuna and tuna-like species are considered to be susceptible to overfishing or are currently overfished, and moreover any impact on their stocks will extend over a large area, beyond territorial waters. This is compounded further by the limited data available on fish stocks and sustainable yield in URT waters. While remedial actions can be proposed, for example, through the implementation of a Tuna Fisheries Management Plan, these will require capacity building for implementation, monitoring and reporting and associated financial resources. Thus, the deep sea fisheries and related interventions are considered to be Category A.

The table below summarises the IFAD/SECAP, GoT and RGZ screening categories currently allocated to the various AFDP interventions based on categorisation presented in the First Schedule of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018, for AFDP activities as described in the PDR (July 2020). A detailed table describing the justification for the various screening categories is presented in Annex 4.

Table 9-1: Screening Categorisation for AFDP Interventions

Components and Interventions	Activity categorisation		No. of ESIA/PB Studies
	GoT/RGZ	SECAP	
Component 1. Enhanced productivity of crop seeds and fisheries			
Subcomponent 1.1: Crop seed systems development: National seed demand and supply coordination, Innovation development and Early Generation Seed production; Basic seed multiplication; Seed certification			
Irrigated fields as seed farms <100ha in size including: laboratory, seed dryer, processing plants, workshops for farm equipment maintenance, water reservoirs, and seed treatment and storage facilities for produced seed, and boreholes	B1	B	2
Irrigation schemes for EGS approx. 25ha in size including: laboratory, workshops for farm equipment maintenance, water reservoirs, seed treatment and storage facilities, and boreholes.	B2	B	2
Seed Testing Laboratories (infrastructure & equipment) Seed certification (field and lab control, electronic systems for seed authentication)	B1	B	3
Subcomponent 1.2: Fisheries and aquaculture development: Development of sustainable marine fisheries production system; Increasing aquaculture productivity and output; Increasing mariculture productivity and output			
Mainland: Fishing vessels x4 (25m) for deep sea fishing, fish processing and storage >50T /day	A	A	1
Zanzibar: Fishing vessels x4 (18m) for deep sea fishing, fish processing and storage <50T /day	A	A	1
Support to artisanal fishing: provision of fishing gear to artisanal fishers (90 FADs)	B2	B	1
Aquaculture demonstration centres at 3 ADC sites, incl borehole and one water supply system at Kingolwira	B1	B	3
Additional Borehole at Boma Road for Kingolwira ADC	B1	B	1
Tissue culture nursery in Unguja, incl. seaweed technologies and demonstration farm	n/a	B	1
Mariculture training centres x 2 (Unguja and Pemba) <360 students	n/a	B	2
Component 2. Improved market access, value addition and private sector development			
Subcomponent 2.1: Quality seed use and business development: Zonal multi-stakeholder innovation platforms. Promoting offer and access to improved seeds. Promoting awareness and demand for improved seeds			
Distribution networks, linkages between agrodealers and farmers to facilitate access to improved seeds	n/a	C	0

Components and Interventions	Activity categorisation		No. of ESIA/PB Studies
	GoT/RGZ	SECAP	
Promotion of use of improved varieties and CSA practices (targeted support to extension)	n/a	C	0
Support FO for services for member access to inputs and markets	n/a	C	0
ICT platforms for dissemination of information on seed availability (improved varieties and quantities)	-	B	1
Sub-component 2.2: Fish market development and value addition: Reducing post-harvest losses. Private-Public-Producer partnerships (4Ps) joint venture for deep sea fishing. Increasing value/income from aquaculture production			
Ice plants for smallscale fishers x 8 (cap <50T/day)	B1	B	8
Cold chain: Cold storage facilities (40 t/facility) x2 and Refrigerated trucks x5	B1	B	2
Construction of fish market at Kipumbwi, incl. storage and ice plant	B1	B	4
Dagaa solar powered drying racks x80	n/a	B	1
Solar drying tents for seaweed and machines for grinding dried seaweed x5	n/a	B	1
Fish feed mills	n/a	B	1
Component 3. Programme Management and Coordination			
Subcomponent 3.1: Policy engagement and institutional strengthening			
Institutional reforms in public institutions	n/a	C	0
Development of aquaparks (aquaculture cluster growth model)	n/a	C	0
Subcomponent 3.2: Programme Management and Coordination: Programme management, coordination, monitoring and evaluation (M&E), communication and knowledge management	n/a	C	0
Subcomponent 3.3: Emergency recovery and resilience post COVID-19	n/a	C	0
TOTAL NUMBER OF ESIAS AND PROJECT BRIEFS			36

Where categorisation by national legislation and SECAP categorisation differs, the more stringent categorisation is applied.

Activities not supported by IFAD

There are a number of activities that IFAD will not support or implement, for which SECAP (2017) refers to the IFC exclusion list[44]. In the context of AFDP, these are:

- Production or trade in alcoholic beverages;
- Production or trade in tobacco;
- Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCBs, wildlife (including marine fauna) or products regulated under CITES. AFDP will have to ensure beneficiary farmers use approved pesticides and herbicides. An indirect impact of AFDP may result in an increase in killing of threatened or endangered species as bycatch. AFDP must therefore ensure that sufficient provision is made for the protection and conservation of such marine fauna their habitats;
- Production or activities involving harmful or exploitative forms of forced labour[45] and/or

[44] International Finance Corporation Exclusion List: www.ifc.org/exclusionlist

[45] Forced labour means all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

harmful child labour[46]. As such forced labour may not be an issue for AFDP subprojects, but it should be noted that IFAD requires that all workers (farm hands, fishers, casual workers) are paid decent living wages, and that labour and working conditions and well-being of workers and local communities are fully considered and in line with ILO conventions. In rural societies, children often skip school during the harvest period in order to assist their families on the farms. Children working on agricultural projects are especially susceptible to harm from poor use and management of agrochemicals. AFDP supported subprojects will therefore need to ensure that harvesting (and other) activities do not interfere with children's education, and that children do not handle agrochemicals and are not otherwise exposed to these substances.

SECAP (2017) also states that IFAD will not support "*projects in areas of critical habitats or which result in conversion or degradation of such habitats"*. Emphasis will be to identify alternatives and ensure that any potential degradation or conversion is firstly avoided, and if not avoided, appropriately mitigated. With regard to the AFDP-supported activities, it will ensured that deep sea and artisanal fisheries do not creep into marine protected areas or areas that are important for spawning, breeding and congregation areas for marine fauna.

9.4.3 Environmental, Social and Climate Safeguards Documentation

The main types of safeguards documentation required to be prepared for AFDP are:

vii. Environmental and social impact assessment studies (ESIAs) and Environmental and Social Impact Statements (ESISs) for Category A projects;
viii. Project Briefs (PBs) - equivalent to SECAP's Category B Environmental and Social Management Plans) for Category B projects;
ix. Standard Operating Procedures (SOPs) and activity-specific management plans;
x. Climate risk analysis (CRA)
xi. Integrated Pest Management Plan (IPMP) where agrochemicals are to be used;
xii. Stakeholder Engagement Plan (SEP) to guide stakeholder consultations for the duration of the various interventions and subprojects.

AFDP will not cause any physical or economic displacement, since all activities will take place on existing government-owned land, or within territorial waters or in the EEZ. There is therefore no encroachment onto, or acquisition of, ancestral lands belong to indigenous groups, nor will any of the Programme's interventions and activities affect indigenous groups. Furthermore, the Programme will not trigger FPIC as defined by IFAD's How to do Note on Free Prior Informed Consent, since it involves agricultural and fisheries development subprojects in rural areas with no indigenous groups or minorities, and which will not affect land rights. Hence the need for a Resettlement Action Framework or Resettlement Action Plans, Indigenous Peoples Plans or FPIC Implementation Plan is precluded.

The various safeguard documents required to be prepared for AFDP subprojects and interventions are described below.

Environmental and Social Impact Assessment (ESIA)

Category A subprojects supported AFDP will require full ESIAs to be conducted in line with the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018, culminating in the preparation of an Environmental and Social Impact Statement.

An EIS must cover, among others:

[46] Harmful child labour means the employment of children that is economically exploitive, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health, or physical, mental, spiritual, moral, or social development.

a) Administrative and institutional arrangements required for environmentally sound implementation of the environmental management, applicable national and international environmental legal and policy frameworks and their relevance to the project;
b) A detailed description of the proposed project components, as well as all ancillary works including location, technologies to be used, materials and their quantities, construction period, etc;
c) A detailed description the biophysical and socio-economic baseline conditions, bearing in mind that these provide the basis for impact analysis and monitoring;
d) A description of other ongoing or planned developments in the project area that could have cumulative or synergistic effects on the project outcome;
e) A stakeholder engagement plan (SEP) for consultations to be prepared and implemented during the ESIA study, and subsequently during subproject implementation;
f) Outcomes of stakeholder consultations and public participation and recommendations for addressing stakeholder concerns in design and implementation;
g) Identification and analysis of anticipated adverse impacts and risks, and cumulative impacts, as well as beneficial impacts;
h) Analysis of alternatives, including project sites, access options, technologies, construction methodologies, etc, and a 'no project' alternative;
i) Preventative, mitigation and enhancement measures;
j) Recommendations for changes to project design;
k) Environmental and social management plan (ESMP – which includes climate risk resilience proposals);
l) Grievance redress mechanism;
m) Monitoring and auditing requirements and procedures;
n) Costs for environmental and social management and monitoring, and climate resilience measures.

The steps to be followed are specified in the Fourth Schedule of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018.

As ESIAs are done in tandem with the feasibility studies and design development, it is important that:

- Stakeholder concerns – particularly those of the communities and project affected persons - are addressed in the ESMPs, and if they are not, reasons for doing so should be explained;
- The subproject designs and activities should be presented to the target beneficiaries for their approval and acceptance.

All ESIAs are required to be undertaken by NEMC-registered expert. The outcome of the ESIA studies will be the preparation of Environmental Impact Statements (EISs), which will be submitted to the ESC Specialist for review to ensure that all critical issues are properly addressed and the documents meet both NEMC's and IFAD's quality standards. The EISs will then be submitted to NEMC for review and approval.

Project Brief

AFDP interventions falling under GoT/RGZ category B1 and B2, and SECAP Category B require a Project Brief to be prepared, which in SECAP terminology is equivalent to an Environmental and Social Management Plan (ESMP). In the preparation of Project Briefs/ESMPs, guidelines in the First Schedule of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018, together with SECAP's ESMP formats, will be closely followed. It will also be noted that ESIA reports must contain ESMPs. The steps to be followed are specified in the Fourth Schedule

of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018.

A Project Brief must state:

a) The nature of the project in accordance with the categories identified in the First Schedule of the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018;
b) The location of the project including to the physical area that may be affected by the project's activities;
c) The activities that shall be undertaken during the project construction, operation and decommissioning phases;
d) The design of the project;
e) The materials to be used, products and by-products, including waste to be generated by the project and the methods of their disposal;
f) The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation of the project;
g) An action plan for the prevention and management of possible accidents during the project cycle;
h) A plan to ensure the health and safety of the workers and neighbouring communities;
i) The economic and socio-cultural impacts to the local community and the nation in general;
j) The project budget; and
k) Any other information which the Council may require.

The Project Briefs will be prepared by NEMC-registered experts hired by the PCU. The Project Briefs will be submitted to the ESC Specialist for review to ensure that all pertinent issues are properly addressed and the documents meet both NEMC's and IFAD's quality standards. The Project Briefs will then be submitted to NEMC for review and approval.

To the extent possible, stakeholder concerns should be addressed in the ESMPs. Where feasible, subproject designs and activities should be presented to the target beneficiaries for their approval and acceptance.

While the actual implementation of ESMPs will be implemented by contractors and implementing agencies, the DEMOs will be responsible for ensuring that these are implemented and will carry out regular monitoring. However, oversight, supervision and monitoring of ESMP implementation will be done by the ESC Specialist.

Standard Operating Procedures and Activity-Specific Management Plans

Depending on the scale and complexity of the individual interventions proposed under AFDP, standard operating procedures (SOPs) or activity-specific plans may need to be developed to ensure environmental protection, community and occupational health and safety and other risks and hazards. These may include the following:

- Traffic Management Plan;
- Waste Management Plan;
- Health and Safety Management Plan;
- Pollution Contingency Plan;
- Erosion Management Plan;
- Occupational Health and Safety Plan;
- Community Health and Security Plan;
- Emergency Preparedness, Response and Evacuation Plan;
- Cultural Heritage Management Plan.

These plans would be developed by the ESC specialist.

Climate Risk Analysis (CRA)

The purpose of climate risk screening is to determine the exposure of the project to climate-related risks (High, Moderate or Low) based on available information about historic climate hazard occurrences, current climate trends and future climate change scenarios, as well as to assess the likelihood of the project increasing the vulnerability of the expected target populations to climate hazards. It provides an opportunity to integrate climate issues into project design and therefore increase project resilience and hence sustainability. The Programme is screened as having Medium Risk, and therefore a Basic Climate Risk Analysis has been prepared for AFDP, and is presented Chapter 8).

However, as part of the environmental analysis – both for Project Briefs and for ESIAs – the risks on specific interventions or subprojects needs to be assessed in the context of susceptibility to climatic events in their locations and resilience of the activities to those climatic events. The discussion should, for example, assess what crop seeds would be best suited to the selected subproject area over a projected time frame. Similarly, the sex of fish may be affected by warmer or cooler water temperatures (both in aquaculture ponds and in the deep sea) and this may affect reproductive capacity of particular species, and therefore recruitment levels.

Integrated Pest Management Plan (IPMP)

The AFDP will stimulate increased agricultural productivity, and therefore increased use of agrochemicals. Agrochemicals (mainly fertilizers, pesticides and herbicides) may be necessary to achieve higher yields, but they must be carefully applied as they have various adverse environmental and social impacts related to contamination of water bodies and soil and thereby threatening biodiversity, risks to farm workers and community health from exposure to agrochemicals, and releases of GHGs. In order to properly manage the use of pesticides, an Integrated Pest Management Plan (IPMP) must be prepared. Guidelines for the preparation of an IPMP are presented in Annex 5.

FAO defines integrated pest management as: "*the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment*. *IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms".*

The following main steps can be considered as typical for an IPM approach[47]:

- Prevention and/or suppression of harmful organisms. This is often best achieved by a combination of the following options:
    - crop rotation;
    - inter-cropping use of adequate cultivation techniques (eg. seedbed sanitation, sowing dates and densities, under-sowing, conservation tillage, pruning and direct sowing);
    - where appropriate, use of pest resistant/tolerant cultivars and standard/certified seed and planting material;
    - balanced soil fertility and water management, making optimum use of organic matter;

[47] http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/ipm/more-ipm/en/

    - prevent spreading of harmful organisms by field sanitation and hygiene measures (eg. by removal of affected plants or plant parts, regular cleansing of machinery and equipment);
    - protection and enhancement of important beneficial organisms, e.g. by the utilisation of ecological infrastructures inside and outside production sites.
- Harmful organisms must be monitored with adequate methods and tools, where available. Such adequate tools should include observations in the field and where feasible warning, forecasting and early diagnosis systems.
- Based on the results of the monitoring it is decided whether and when to use what pest management inputs. Sustainable biological, physical and other non-chemical methods must be given priority over chemical methods if they provide satisfactory pest control.
- Pesticides should only be applied as a last resort when there are no adequate non-chemical alternatives and use of pesticides is economically justified.
- The pesticides applied shall be as specific as possible for the target and shall have the least side effects on human health, non-target organisms and the environment, while their use should be kept at minimum levels, e.g. by partial applications.
- Monitor the success of the applied pest management measures.

The IPMP should evaluate the impact of potential pests prior to programme implementation, identify the type of pests and assess the magnitude of impacts likely to be caused by those pests. In assessing the hazards of pesticide use, the toxicity of the pesticide and exposure to it are key elements. Therefore, as a minimum, the IPMP should:

- Screen the types of pesticides for toxicity by ensuring: they are effective against the target species, have negligible adverse impacts on human health and non-target species, will not precipitate resistance in pests, and do not fall into WHO class 1A or 1B;
- Aim to reduce exposure time or degree of exposure.
- Propose alternative non-pesticide management options (physical, mechanical and biochemical), as well as any available less toxic varieties of the pesticides.

The ESC Specialist, in collaboration with the NEMC, PHS-MOA and PPD-MANRLF will prepare the IPMP as applicable to crops promoted through AFDP. The IPMPs will then be distributed to all the regions where crop seed development and aquaculture activities are taking place. Key agencies (ie. TARI, ASA and ADC) will ensure that all those involved in interventions requiring the use of agrochemicals receive, understand and implement the IPMP. The IPMP must also stipulate national requirements and approved and appropriate agrochemicals used in the schemes. In developing the IPMP, reference should be made to SECAP's Guidance Statement #2 on Agrochemicals, and IFC's EHS Guidelines on Crop Production (revised 2015).

Stakeholder Engagement Plan (SEP)

SECAP requires that meaningful consultation with communities (especially targeted groups) and stakeholders that are likely to be affected by IFAD's operations be conducted throughout the Programme life cycle. The objective of stakeholder engagement is to ensure that all key stakeholders, and in particular beneficiary communities, contribute to the development of the Programme. As a result, broad community acceptance and support to the Programme interventions is achieved, ensuring environmental and social sustainability of the Programme as a whole. The Stakeholder Engagement Plan consolidates processes for guiding engagement with the entire range of stakeholders and establishing means for consultations and other forms of engagement, timing and frequency of engagement, responsibility for implementing the engagement activities and budgets for implementing the SEP.

The guidance below is drawn from the World Bank's Environmental and Social Framework (2017) and its Guidance Note for ESS10[48].

The objectives of the AFDP SEP will be to:

- Establish a systematic approach to stakeholder engagement that will help the PCU and implementing agencies to identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties;
- Assess the level of stakeholder interest and support for the Programme and to enable stakeholders' views to be taken into account in the Programme's and various intervention designs and their environmental and social performance;
- Promote and provide means for effective and inclusive engagement with project-affected parties
- throughout the Programme life cycle on issues that could potentially affect them;
- Ensure that appropriate information on environmental and social risks and impacts of the interventions and subprojects is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format.
- Provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow the implementing agencies and/or the PCU to respond to and manage such grievances.

The first step in preparing a SEP is to carry out stakeholder mapping and analysis which will identify all stakeholders associated with the AFDP and determine how they influence the Programme or are affected by it. Stakeholders will include, for example, Programme beneficiaries, private and public sector, individuals, groups of individuals, institutions and organisations, etc. Stakeholders may be grouped as follows:

a) Primary stakeholders who are directly involved in the development of the AFDP and its implementation;
b) Secondary stakeholders who are not directly involved in the development and/or implementation of the AFDP, but are affected it;
c) Tertiary stakeholders who may comprise key individuals, or groups, who may significantly influence the success of the Programme, but are not directly or indirectly involved in its development and implementation.

Once stakeholders have been identified and categorised, a communication plan will be prepared. This plan will determine for each stakeholder group:

- How communication/engagement will take place. For example, through face to face meetings, group discussions, emails, newsletters, through radio or newspapers, etc);
- When and how frequently each category of stakeholder will be consulted during the entire Programme period. For example, every week for the first 6 months of implementation, then every month, or every six months; or after the first crop seed harvest, and every month thereafter…;
- Who will be responsible for carrying out the engagement activities. For example, the District Facilitation Team, the research institutions, TAFICO/ZAFICO, the ESIA consultants…
- Costs for implementation of the SEP based on the proposed engagement activities, mode and frequency of communication.

All communication and engagement activities will be documented and this documentation filed and maintained at the PCU offices.

[48] World Bank (2016). World Bank Environmental and Social Framework. World Bank, Washington, DC

A preliminary stakeholder identification matrix is presented in Annex 6.

The SEP will be prepared by the ESC Specialist, in collaboration with the implementing agencies and District Facilitation Teams.

9.4.4 Disclosure of ESIAs and Project Briefs

In developing ESIAs and Project Briefs, consultations must be held with all levels: at community/ village, district and national levels. During these consultations, the processes for disclosure of the documents should be communicated. IFAD's SECAP procedures also require that sufficient consultations have been carried out with key stakeholders (ie. the communities) in order to satisfy its requirements for Free Prior and Informed Consent (FPIC).

While the Project Briefs and ESIAs are being reviewed by NEMC, the ESIAs or Project Briefs and AFDP's Integrated Pest Management Plan (IPMP) will be disclosed nationally, at a location accessible to the general public, and in a form and language that the communities are able to understand, so that they may comment on any aspects/issues contained in the reports prior to their approval. PMO, MoA, MLF and MANRF and IFAD will be responsible for disclosure, and the disclosure period may take up to 60 days.

ESIAs, Project Briefs and the AFDP IPMP may have to be updated to reflect any received comments and indicate how those comments have been accommodated into the relevant subproject design and implementation procedures. If the comments have not been taken on board, the reason for doing so must be provided.

It is also important that the all designs for the proposed interventions are discussed and approved by the target beneficiary groups and any project affected persons.

9.4.5 Review and Approval of ESIAs, Project Briefs and IPMP

ESIAs and Project Briefs will be reviewed by the PCU ESC Specialist and then submitted for review and approval/clearance to NEMC.

The AFDP IPMP will be reviewed by IFAD and approved by the Plant Health Services Unit (PHS) of the MoA, Fisheries Development Division in the MLF, and the Plant Protection Division (PPD) of the MANRLF.

9.4.6 Gender Based Violence and Sexual Exploitation and Abuse

GBV/SEA Risk Factors

AFDP component interventions, depending on their scope, can exacerbate existing risks or can create new ones. Project-related risk factors may include:

- Women perceived as taking jobs away from men;
- Unequitable sharing of income between men and women after sale of produce;
- Failure by communities to relate with construction labourers who sometimes have different culture and language.

All these can exacerbate already existing inequities between women, men, and youth.

GBV/SEA Risk Mitigation Measures

The prevention and mitigation of GBV/SEA requires interaction and collaboration between major actors in the AFDP project sub components. These may include: i) the farmers especially women and their children, as well as other vulnerable populations, in communities where AFDP will be implemented; ii) the communities including cultural, religious and informal structures who may play a protection role; iii) contractors and consultants who are responsible for following contractually mandated social and labour practices that prevent abuse and violence; iv) Local Government offices who are critical to ensure that SEA prevention and accountability mechanisms are in place; v) workers including extension officers who will need to abide by codes of work ethics or codes of conduct. In the AFDP context, SEA/GBV risk level is considered to be of medium, and therefore the project will deploy the following strategies:

- Use the GALS methodology to handle GBV/SEA and other gender and youth related inequalities at the household, farmers' group and community level;
- Sensitize communities especially the vulnerable populations on the laws and services that can protect them and provide redress in case of an incident;
- Train farmers' and fishers groups in conflict management.

AFDP will work with service providers for survivors of SEA/GBV (for example through district community development officers, probation officers and police) to offer a minimum basic package of services, ideally including case management support, health services, psychosocial support, shelter— if needed— security and access to legal services.

9.4.7 Grievance Redress Mechanisms

Grievance Redress Mechanism (GRM) for AFDP

The goal of AFDP's GRM is to promote a mutually constructive relationship and enhance the achievement of Programme's development objectives. The GRM is to ensure that complaints are directed and expeditiously addressed by the relevant agencies which are to enhance responsiveness and accountability.

AFDP will utilize existing formal or informal grievance mechanisms to resolve disputes which may arise. Informal mechanisms include existing committees and or individuals in farmers groups responsible for conflict management to handle disputes. The formal grievance redress mechanisms exist at ward levels where the members of ward tribunals are involved in dispute resolution. For criminal cases, the police are required to intervene. Should disputes not be resolved at these levels, then the matter is taken to the district magistrate's, resident magistrate and finally high courts. Conflicts related to labour relations at work place between employee and employer are resolved by Commission of Arbitration and mediation.

Typical Grievances under AFDP

Likely common grievances in the project implementation areas will include:

- Non-payment of work done;
- Non-payments of infrastructure construction materials;
- Non-payment for land taken up by the project common infrastructures;
- Occupation, health and safety;
- Gender based violence;
- Sexual exploitation and abuse;
- Construction safety and nuisances caused by construction;

- Non-fulfilment of contracts.

Each project site is expected to operate its mechanisms of handling feedback and complaints. Feedback or complaints are to be encouraged among all workers and community members throughout the project and resolved without undue delay. This will also be closely monitored and reported through the different project levels including PCU level. Such a mechanism will be checked to ascertain its effectiveness, accessible and transparent procedures to receive and resolve complaints and where need be and for purposes of delivering this project, it shall then be reviewed and modified accordingly.

Guiding Principles for AFDP GRM

The GRM for the AFDP is designed on the following universal principles:

- Accessibility and social inclusion;
- Simplicity;
- Transparency;
- Inclusivity;
- Due process and impartiality;
- Prompt action;
- Qualifications (eg communication skills);
- Grievance uptake points;
- Analysis and feedback.

Steps of Grievance Redress in AFDP

The first step in setting up a GRM will be to appoint a committee to handle grievances. At the farmers' or fishers' group level, members will elect three members (male, female, youth) to form a Grievance Redress Committee (GRC) as part of the executive committee, or they may elect one person as a grievance handling officer. The DCDOs will meet with the grievance committee on a regular basis to handle any dispute referred to them. At the PCU level, MoA, MLF and MANRLF will nominate a member of staff to support the ESC Specialist at PCU level to handle grievances that may be escalated to this level.

A verbal or a written complaint from aggrieved person will be received by a person assigned in the project as the Grievance Officer (GO)/Counsellor/ Grievance Redress Committee (GRC) and recorded in a grievance log/book. Grievances can be lodged at any time. The following steps will be followed;

i. Registration of the complaint;
ii. Verification to determine eligibility undertaken by the Grievance Officer (GO)/Counsellor/ Grievance Redress Committee (GRC);
iii. Processing, including hearings and resolutions;
iv. Implementation and case closing.

The PCU ESC Specialist will be responsible for overall monitoring of the effectiveness of the GRMs for Programme interventions and subprojects.

IFAD's Complaints Procedure

In addition to AFDP's GRM, communities and individuals who believe that they are adversely affected by AFDP activities may submit complaints to the IFAD Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the IFAD's independent

Inspection Panel, which determines whether harm occurred, or could occur, because of IFAD non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the IFAD's attention, and IFAD Management has been given an opportunity to respond. Complaints in may also be lodged using the following email: SECAPcomplaints@ifad.org.

9.4.8 Monitoring

Performance Monitoring

Performance monitoring requires that:

- The various safeguards instruments (ESIAs, Project Briefs, ESMPs, and IPMP) have been prepared to the required standard, within the required timelines;
- The safeguards instruments have been reviewed and approved by the responsible entities;
- Environmental, social and climate mitigation measures, have been/are being implemented and that mitigation measures are effective. This includes monitoring the implementation of the ESMPs and IPMP, and also the grievance redress mechanism(s);
- The community is participating in all stages of the environmental and social management and monitoring processes;
- PCU and relevant officers in the implementing agencies have been trained in accordance with the capacity building proposals;
- Reports are prepared and delivered as required.

Performance monitoring will be done primarily by the ESC Specialist.

Examples of typical monitoring parameters and indicators are shown in Table 9-2 below:

Table 9-2: Typical Performance Monitoring Indicators

Monitoring Parameter	Monitoring Activity/Indicators	Target	Responsibility for Monitoring
Safeguards			
NEMC Approvals received	% of EISs, Project Briefs approved	100% ESIAs, Project Briefs approved	ESC Specialist
Licences and permits	% of required permits obtained	100% of required permits obtained	ESC Specialist
Safeguards training	# of PCU and relevant implementing agency officers trained	All PCU and relevant implementing agencies officers trained	ESC Specialist
Grievance Redress	# of subprojects having functioning grievance redress committees	All subprojects have functioning grievance redress committees	ESC Specialist
	# of grievances received	% of grievances resolved	ESC Specialist
Reporting	No. of quarterly reports received	4 quarterly reports received	ESC Specialist
	No. of annual reports received	1 annual report received	
Intervention Level Monitoring			
Workshops, Wet and Dry Docks	# of incidents of oil spills per month	Zero incidents of oil spills per month	ESC Specialist, EMU-MLF, MANRLF

Monitoring Parameter	Monitoring Activity/Indicators	Target	Responsibility for Monitoring
	# of workplace accidents and incidents per month	Zero workplace accidents and incidents per month	
Laboratory and storage	Quality of wastewater discharge	Effluent conform to national standards for wastewater discharge	ESC Specialist, EMU-MoA, Water Basin Office
Crop seed development expansion	Baseline acreage under crop seed cultivation	% increase of acreage under crop seed cultivation	ESC Specialist
Agro-processing	Quality of wastewater discharge	Effluent within national standards for wastewater discharge	ESC Specialist, EMU-MoA, Water Basin Office
Small scale irrigation schemes	# days water not available for irrigation in a year	Zero days water is not available in a year	ESC Specialist, EMU-MoA, Water Basin Office
	# days abstraction rate exceeds permitted rate in a year	Permitted abstraction rate for 365 days/year	
Stores/sheds	% of stores/sheds with functional fire-fighting equipment	100% stores/sheds have functional fire-fighting equipment	ESC Specialist
	% of stores/sheds with adequate ventilation	100% of stores/sheds have adequate ventilation	

Results Monitoring

Results monitoring involves monitoring compliance and effectiveness of the safeguards instruments, and also assesses the overall environmental, socio-economic and climate-related impacts of the Project's interventions in relation to its development objectives. Results monitoring will be done on an annual basis by the ESC Specialist, in collaboration with the DEMOs, DCDOs and Regional Environmental Experts. Results monitoring will be critical in providing feedback and lessons learned for any future phases of AFDP. Typical parameters for results monitoring are shown in Table 9-3 below. Social and socio-economic indicators should be measured specifically for the hubs in which the subproject interventions are taking place.

Table 9-3: Typical Results Monitoring Parameters

Monitoring Parameter	Monitoring Activity/Indicators
Water quality in water courses	Water quality at given sites downstream of, or proximate, to irrigation schemes, demonstration plots, agro-processing facilities, aquaculture ponds
Agrochemical releases into water courses	Water quality at given sample sites along drainage network, and point of discharge
Agrochemical concentrations in aquatic fauna	Noticeable number of times dead fish observed in rivers, marshlands and lakes
Soil quality	Nutrient depletion and loss in structure
	Agrochemical contamination
Economic activity in Project area	Changes in agricultural production and marketing
Socio-economic status	Changes in poverty levels
	Changes in nutrition status
	Changes in employment levels for women, men and youth

9.4.9 Quarterly and Annual Reviews

Quarterly and annual reviews will be undertaken by the ESC Specialist. These reviews are necessary to:

- Ensure that subprojects and interventions are complying with the processes established in the ESMF;
- Ensure that subprojects are compliant with the conditions and requirements stipulated in ESIAs, ESMPs and IPMP;
- Identify challenges and opportunities in order to learn lessons and thereby improve Programme performance; and
- Be able to determine the cumulative impacts of the Programme to establish attainment of its Development Objectives.

Each year, workshops will be held where environmental, climate change and social performance of the Programme will be reviewed and discussed, and recommendations made for improved Programme performance. These workshops will be attended by the ESC Specialist, DEMOs, DCDOs, members of the ministry EMUs, and Regional Environmental Officers, among others.

The Quarterly and Annual Review reports will be presented to PSC in order to ensure that the Programme activities are achieving its objectives. IFAD will participate in these presentations.

9.4.10 Reporting

Each implementing agency will submit monthly reports on environmental, social and climate-related issues to the PCU on their respective interventions and activities.

The PCU Programme Coordinator will submit quarterly and annual environmental, social and climate performance reports to the PSC and IFAD.

9.4.11 Annual Monitoring Audits

The purpose of auditing is to establish the level of compliance with national policy objectives and regulatory requirements and whether NEMC's conditions of approval attached to the EISs and Project Briefs are being implemented satisfactorily. The PCU will be responsible for ensuring that annual monitoring audits (for environmental and social compliance) are carried out once every year. The audits will be carried out by independent NEMC-registered expert.

Audit reports will be sent to the PSC and IFAD, as well as to NEMC and the respective implementing agencies. NEMC will review the audits and provide feedback to the PSC for passing onto the respective implementors.

9.5 Summary of Processes and Responsibilities

Table 9.4 below summarises the procedures and responsibilities described in this ESMF.

Table 9-4: ESMF Procedures and Responsibilities

ESMF Procedures	Activity	Responsibility
ESIA/Project Brief	Preparation of EIS or Project Brief, both containing ESMPs	NEMC-registered Expert
	Disclosure of EIS or Project Brief	MoA, MLF, MANRLF and IFAD
	Review of EIS or Project Brief	ESC Specialist
	Review and approval of EIS or Project Brief	NEMC
	Implementation of ESMP	Implementing agencies, contractors
	Supervision and monitoring of the ESMP developed for EIS or Project Brief	ESC Specialist and DEMOs
Other Plans/SOPs	Preparation of management plans / SOPs	Consultant or Technical Assistants, supervised by ESC Specialist
	Implementation of SOPs	ESC Specialist
Climate Risk Analysis	Climate risk monitoring	ESC Specialist, VPO's Office
IPMP	Preparation of IPMP	ESC Specialist
	Review and approval of IPMP	IFAD, PHS (MoA-TZ), and PPD (MANRF-ZNZ)
	Supervision and monitoring of implementation of IPMP	ESC Specialist, District Agricultural Officers, District Fisheries Officers
Grievance Redress Mechanism	Grievance receipt, verification, investigation, resolution, communication with complainant and referral to higher levels if necessary	GO/GRC Ward tribunals
	Monitoring of effectiveness of GRM	ESC Specialist
Performance monitoring	Safeguards instruments	ESC Specialist
	Intervention level activities	Implementing agencies
Results Monitoring	Project level environmental and social indicators	ESC Specialist, DEMOs, DCDOs, Regional Environmental Officer

ESMF Procedures	Activity	Responsibility
Reviews	Submission of quarterly review reports to PSC and IFAD	ESC Specialist
	Submission of annual review reports to PSC and IFAD	ESC Specialist, PCU ME&KM Officer
Reporting	Monthly environmental, social and climate resilience reports to PCU	Implementing agencies
	Quarterly and annual environmental, social and climate resilience performance reports to the PSC and IFAD	PCU Programme Coordinator
Annual Monitoring Audits	Audits of subprojects once every year	Carried out by independent Expert registered with NEMC. Overall responsibility ESC Specialist. Reviewed/approved by NEMC

10 Capacity Building

The successful implementation and monitoring of the environmental and social management framework, environmental and social management plans (ESMPs) will require that target groups and stakeholders who play a role in the implementation of the ESMF be provided with appropriate training and awareness. This is necessary because the implementation of the activities will require inputs, expertise and resources which will be adequately taken care of if the concerned parties are well trained. These groups are described below.

10.1 Existing Capacity

Capacity building of implementing agencies is a necessary step that needs to be taken in order to ensure that ESMF processes and requirements are followed during implementation of AFDP. The institutional arrangement for implementation of the program involves various implementers within the Ministry of Agriculture and Livestock and Fisheries as well as Ministry of Agriculture, Natural Resources and Environment in Zanzibar. The implementation arrangement is organized in such a way that there are those that have coordination roles especially Ministries and Program Coordination Unit while others will actually implement activities on the ground. Some beneficiaries of the program like crop and aqua farmers also fall under the category of implementers of activities and may require some sort of capacity building.

Having such a broad range of implementers of the program one cannot rule out issues of capacities. Although systematic capacity assessment has not been conducted to identify existing capacities and gaps but discussions with various implementers and beneficiaries show that there exist gaps in abilities of government agencies to manage environmental and social impacts and risks and to implement national laws and SECAP requirements. Furthermore, it was established that much as most of government agencies have staff who are educated up to bachelors or master's degree levels in their field of studies, their knowledge on the requirements of environmental legislations and regulations is not adequate to fully implement ESMPs to the required standard. Therefore, in order to ensure that environmental and social safeguards requirements are wholly integrated into AFDP during implementation, it is proposed that various types of training be conducted to various implementers.

10.2 Training Topics

Training will be delivered according to the needs of actual implementers of specific activities under AFDP. The following are topics will be covered during training:

- Requirements of the national environmental, social and climate policies, legislation, EIA regulations and administrative frameworks;
- Requirements of IFAD's SECAP and ERNM, Climate, Land and Disclosure Policies;
- ESMF processes, procedures and institutional arrangements to develop and implement required safeguards documents;
- Screening and rating as prescribed in the ESMF;
- Environmental, social and climate impact assessment, IPMP, Physical cultural resources assessment approaches and requirements;
- Preparation, implementation and monitoring of ESMPs, ESIAs, and IPMPs;
- Reporting and monitoring implementation of ESMPs and IPMPs;

- Environmental and social best practices - including proper application of chemical inputs, pest management, water saving agronomic practices, soil fertility management, and labour saving techniques;
- Conservation agriculture techniques;
- Sustainable fishing methods;
- Fisheries reporting protocols.

10.3 Target Audience

The target audiences for training are intended to be:

- Centres Managers and field officers of ADCs;
- Farm managers and Field officers of TARI;
- Managers and Lab staff of TOSCI;
- Managers and Field officers of ASA;
- Head of department and Fisheries officers at Bagamoyo District Council;
- Head of department and Fisheries officers at Pangani District Council;
- Head of department and Fisheries officers at Mafia District Council;
- Head of department and Fisheries officers at Kilwa District Council;
- Head of department and Fisheries officers at Fisheries development department-Zanzibar;
- Management team of TAFICO;
- Management team of ZAFICO;
- Leaders of Beach Management Units at Bagamoyo, Kilwa, Pangani and Mafia;
- Leaders of small holder farmers groups who will do seed multiplication;
- Leaders of seaweed farmers groups.

10.4 Training Approach

Training of Programme implementers at various levels will be integrated into planned training activities during the course of implementation. This approach has been adopted to effectively reduce cost as well as saving time that would have been spent in organizing separate training sessions for various implementers. Trainings will be organized at Aquaculture Development Centres, Mariculture Training Centres, ASA Centres, TOSCI Centre, TARI Centres, TAFICO and ZAFICO offices and district councils. All trainings will be organized by the PCU in collaboration with the implementing agency/department.

10.5 Training Summary

Table 10-1 below presents a summary of proposed trainings, target audience and training methods.

Table 10-1: Summary of Proposed Trainings

Training Topics	Target Audience	Training Methods
National environmental, social and climate policies, legislation, regulations and administrative frameworks requirements	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers, Leaders of farmers and fishers groups, Leaders of Seaweed farmers and Leaders of	Training workshops/seminar organized at respective centres/offices of implementing agencies

Training Topics	Target Audience	Training Methods
	Beach Management Units/Fisheries Cooperatives	
IFAD's SECAP and ENRM, Climate, Land and Disclosure Policies	ADCs, ASA, TARI, TOSCI, Fisheries Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
ESMF processes, procedures and institutional arrangements to develop and implement required safeguards documents, including development of Stakeholder Engagement Plans and Grievance Redress Mechanims	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Environmental, social and climate impact assessment, IPMP, PCR assessment approaches and requirements, environmental and social audits	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Preparation, implementation and monitoring of ESMPs, ESIAs, IPMPs	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Reporting and monitoring the implementation of ESMPs and IPMPs	ADCs, ASA, TARI, TOSCI, Fishery Department-Zanzibar, Bagamoyo, Pangani, Kilwa and Mafia district fisheries officers	Training workshops/seminar organized at respective centres/offices of implementing agencies
Environmental and social best practices – including proper application of chemical inputs, pest management, water saving agronomic practices, soil fertility management, labour saving techniques,	Aqua Farmers groups, Crop Farmers groups, Fishers groups and Beach Management Units/Fisheries Cooperatives	Practical training sessions organized at respective centres/offices of implementing agencies
Conservation agriculture techniques	Farmers groups	Practical training sessions
Sustainable fishing methods, fisheries reporting	Fishers groups and leaders of Beach Management Units/Fisheries Cooperatives	Training workshop

11 ESMF Implementation Budget

The cost estimate for the implementation of activities proposed in this ESMF is USD 572,000, as presented in Table 11-1 below. This includes costs for undertaking the environmental and social analyses for Category A and B projects, costs to be paid to NEMC for review of these studies, as well as for carrying out the requisite annual monitoring audits. The budget also provides for, *inter alia*:

- Preparation and implementation of environmental and social management plans and SOPs;
- Supervision and monitoring of environmental and social monitoring activities;
- Annual ESC reviews be undertaken by the PCU, and attended by DEMOs, DCDOs, members of the ministry EMUs, and Regional Environmental Officers.

Costs for environmental and social training as described in Chapter 10 above, as well as the implementation of the Tuna Fisheries Management Plan, the Gender Action Learning System (GALS), environmental and social aspects of Knowledge Management and Monitoring & Evaluation, and Project Coordination and Management are accommodated within costs presented in the Programme Costabs.

Table 11-1: ESMF Implementation Budget (USD)

Budget Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Budget USD
ESIAs, Project Brief preparation, NEMC reviews and annual audits	195,000	177,000					372,000
ESMS, SOPs, Supervision and monitoring of ESMPs; Annual ESC Reviews; Sensitisation	30,000	40,000	40,000	35,000	30,000	25,000	200,000
TOTAL ESTIMATED BUDGET: ENVIRONMENTAL, CLIMATE CHANGE AND SOCIAL MANAGEMENT (USD)	225,000	217,000	40,000	35,000	30,000	25,000	**572,000**

12 Summary of Key Issues Arising and Recommendations

12.1 Project Implementation Arrangements

The institutional arrangements for AFDP implementation as presented in the PDR have provided for an Environmental, Social and Climate (ESC) Specialist in the PCU who will be directly responsible for overseeing the environmental, social and climate-related aspects of the Programme interventions. It will be important for the ESC Specialist to work closely with the District Environmental Management Officer (DEMO) and/or District Natural Resources Officer (DNRO) and District Community Development Officer (DCDO), and to continuously liaise with the NEMC Regional Officer. The Programme Coordinator must ensure that the ESC Specialist is adequately facilitated to perform his/her duties as prescribed in the Terms of Reference in Annex 3. A budget has been proposed for the activities to be performed by this Specialist (see Chapter 11).

12.2 Project Categorisation

Deep sea fisheries and related processing activities may have significant adverse environmental and/or social implications that warrant further investigation. The impacts on tuna fisheries are sensitive because a number of tuna and tuna-like species are considered to be susceptible to overfishing or are currently overfished, and moreover any impact on their stocks will extend over a large area, beyond territorial waters. This is further compounded by the limited data available on fish stocks. In order to ensure sustainable tuna fisheries, it has been proposed that a Tuna Fisheries Management Plan will be developed and implemented under AFDP's Fisheries Component. Other AFDP subprojects and interventions such as crop seed development activities (involving small scale irrigation <100ha, seed testing and certification laboratories and a training centre), mariculture involving a training centre to promote technologies to improve seaweed farming, and aquaculture ponds, will have environmental, social and climate-related risks, but mitigation for these risks is easily applied/implemented at reasonable cost. SECAP requires that the overall Programme category is based on the categorisation of the highest risk activities; thus, the AFDP has been categorised as Category A.

12.3 Climate Risk Analysis

The Programme is screened as having Medium Risk, and therefore a Basic Climate Risk Analysis has been prepared for the AFDP (see Chapter 8). However, the risks of climate change on and from interventions or subprojects need to be assessed as part of the Project Briefs / ESIAs that are required to be prepared, in the context of susceptibility to climatic events in their locations and resilience of the activities to those climatic events.

12.4 Physical and Economic Displacement

AFDP will not support subprojects or interventions that will cause any physical or economic displacement. Land to be acquired for demonstration plots, workshops and stores/sheds will be located on Government land, which will be selected provided no economic or physical displacement will take place. The FPIC process is therefore not required to be applied.

12.5 Indigenous Peoples

Although indigenous peoples exist in the larger Programme regions, their ancestral areas are not located near any of the Programme activities, and therefore the Programme will not affect any indigenous groups.

12.6 Community Involvement in Subproject Implementation

Community involvement will be critical throughout AFDP. In particular, AFDP should work with coastal communities to make them more resilient to the effects of climate change and environmental degradation. In this regard, it is recommended that the AFDP works closely with artisanal fishers, BMUs and Fisheries Cooperatives in Tanzania Mainland and Zanzibar in the sustainable management of the coastal ecosystems on which their livelihoods depend. Thus, they should be involved in developing the proposed Tuna Fisheries Management Plan. In addition, the AFDP should support the development of a Marine Spatial Plan, for which the involvement of coastal communities will be essential.

12.7 Capacity Building

During stakeholder consultations, it was noted that there is need for capacity building at the national and district levels to implement environmental and social monitoring and management activities proposed in the ESMF. While the AFDP's lead agencies (PMO, MoA, MLF) have Environmental Management Units, their officers still need to be trained in IFAD's as well as national environmental and social requirements to ensure environmental and social mainstreaming is done from the very start of the Programme interventions.

It is therefore recommended that AFDP's capacity building activities include: requirements of the national environmental, social and climate policies, legislation and administrative frameworks, and IFAD's SECAP and ERNM, Climate, Land and Disclosure Policies; ESMF processes, procedures and institutional arrangements; screening of subprojects as prescribed in the ESMF; assessment of environmental, social and climate impacts; preparation, implementation and monitoring of ESMPs and IPMPs; reporting and monitoring implementation of ESIAs, ESMPs, IPMPs; HIV/AIDS and GBV/SEA sensitisation; grievance redress; and environmental and social best practices. These trainings can be included as modules within capacity building proposals for the various subcomponents so that they would not incur additional costs.

Annexes

Annex 1: References
Annex 2: List of Stakeholders Consulted
Annex 3: Terms of Reference for the Environmental, Social and Climate Specialist for the PCU
Annex 4: Screening and Categorisation of AFDP Interventions
Annex 5: Guidelines for an Integrated Pest Management Plan
Annex 6: Stakeholder Identification Matrix
Annex 7: Study Team, Study Itinerary and ESMF Timelines

Annex 1: References

Documents

Adhikari U., Nejadhashemi A. Pouyan & Woznicki S. A. (2015) Climate change and eastern Africa: a review of impact on major crops, Food and Energy Security 2015; 4(2): 110–132

African Development Bank Group. *Review of land tenure systems to support the creation of an enabling* environment for agricultural transformation: Available at: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Review_of_the_land_tenure_systems_-_Report_on_Tanzania.pdf

Bjerregaard,Rasmus; Valderrama,Diego; Radulovich,Ricardo; Diana,James; Capron,Mark; Mckinnie,Cedric Amir; Cedric,Michael; Hopkins,Kevin; Yarish,Charles; Goudey,Clifford; Forster,John (2016); Seaweed aquaculture for food security, income generation and environmental health in Tropical Developing Countries (English). Washington, D.C.: World Bank Group.

Chang'a, L.B., Kijazi, A.L., Luhunga, P.M., Ng'ongolo, H.K. and Mtongori, H.I. (2017) Spatial and Temporal Analysis of Rainfall and Temperature Extreme Indices in Tanzania. Atmospheric and Climate Sciences, 7, 525-539. https://doi.org/10.4236/acs.2017.74038

Duarte CM, Wu J, Xiao X, Bruhn A and Krause-Jensen D (2017) Can Seaweed Farming Play a Role in Climate Change Mitigation and Adaptation? Front. Mar. Sci. 4:100. doi: 10.3389/fmars.2017.00100

ESRF (2019). *Pwani Region Investment Profile*: Available at: http://www.esrf.or.tz/docs/PwaniRegionInvestementGuide.pdf

FAO (2018). Small Family Farms Country Factsheet

Groot A. D. & al, 2019, Sunflower in Tanzania, Climate change risks and opportunities, Wageningen Environmental Research. The assessment was carried out in the context of the Climate Resilient Agribusiness for Tomorrow (CRAFT) project.

Gruber, N., 2011, Warming up, turning sour, losing breath: ocean biogeochemistry under global change. Philosophical Transactions of the Royal Society A, 369(1943): 1980–1996.

Handisyde, N.T. et al. 2006. The effects of climate change on world aquaculture: a global perspective. Final Technical Report, DFID Aquaculture and Fish Genetics Research Programme, Stirling Institute of Aquaculture, Stirling, U.K.

International Finance Corporation Exclusion List: www.ifc.org/exclusionlist

International Fund for Agricultural Development (2017). Social Environmental and Climate Assessment Procedures.

International Fund for Agricultural Development (2020). Tanzania Agriculture and Fisheries Development Programme. Programme Design Report July 2020.

IOTC (2009). Indian Ocean Tuna Commission Report on Working Session on Data Collection and Statistics. Available at: https://www.iotc.org/meetings/6th-session-working-party-data-collection-and-statistics

IOTC–SC22 (2019). Report of the 22nd Session of the IOTC Scientific Committee. Seychelles, 2 – 6 December 2019. IOTC–2019–SC22–R[E]: 204 pp.

IUCN (2020). Worldwide catalogue of case studies on Aquaculture and Marine Conservation, N°1: Zanzibar. IUCN - Gland, Switzerland.

Lallemand, Phillip (2019). Study on Tuna Fisheries Direct and Indirect Contribution to GDP and Wealth Distribution Patterns in the SWIOFC Member Countries. World Bank.

Luhunga PM, Kijazi AL, Chang'a L, Kondowe A, Ng'ongolo H and Mtongori H (2018). Climate Change Projections for Tanzania Based on High-Resolution Regional Climate Models From the Coordinated Regional Climate Downscaling Experiment (CORDEX)-Africa. Front. Environ. Sci. 6:122. doi: 10.3389/fenvs.2018.00122

Moustahfid H, Marsac F., Gangopadhyay A., 2018, Chapter 12: Climate change impacts, vulnerabilities and adaptations: Western Indian Ocean marine fisheries, within FAO, 2018, Impacts of climate change on fisheries and aquaculture Synthesis of current knowledge, adaptation and mitigation options.

National Bureau of Statistics (2018). *National Population Projections*,. National Bureau of Statistics, Ministry of Finance and Planning and Office of Chief Government Statistician, Ministry of Finance and Planning, Zanzibar. Available at: https://www.nbs.go.tz/nbs/takwimu/census2012/Projection-Report-20132035.pdf

Onkalo, P. J and Sulaiman, M.S (2011). *Bridging the Gap between Cultures.* Available at: https://www.fig.net/resources/proceedings/fig_proceedings/fig2011/papers/ts06c/ts06c_onkalo_sulaiman_5051.pdf

Revolutionary Government of Zanzibar (2005). State of the Environment Report for Zanzibar 2004-2005.

Roxy & al. (2014). The curious case of Indian Ocean Warming, American Meteorological Society, 8501-8509

UNDP (2016). Tanzania Environmental Sustainability, Climate Change and Resilience Strategy Paper.

UNICEF (2017). Tanzania Education Fact Sheet. Available at https://www.unicef.org/tanzania/what-we-do/education

UNICEF Tanzania, Wash fact sheet (United Nations International Children's Fund, 2018), Available at: https://www.unicef.org/tanzania/sites/unicef.org.tanzania/files/2018-10/UNICEF-Tanzania-2017-WASH-fact-sheet_0.pdf

URT ((1999). National Land Act

URT (1974). Water Utilization and Control Act, No. 42.

URT (1984). The National Forest Act.

URT (1996). The National Land Policy.

URT (1997). Development Vision 2025 for Tanzania.

URT (1997). National Agriculture and Livestock Policy.

URT (1998). Forest Policy

URT (1999). The Village Land Act.

URT (2002). The National Irrigation Master Plan. Nippon Koei Co. Ltd, Nippon Giken Inc.

URT (2003). Initial National Communication under the United Nations Framework, Convention on Climate Change (UNFCCC), Vice President's Office, Dar es Salaam.

URT (2004). The Environmental Management Act No. 20 of 2004 (cap.191)

URT (2004). The Third National Report on the Implementation of the UN Convention to Combat Desertification (UNCCD). Vice President's Office, Division of Environment, Dar es Salaam.

URT (2005). National Strategy for Gender Development, (Dar es Salaam, 2005)

URT (2005). National Water Sector Development Strategy – 2006 to 2015; Ministry of Water, Dar Es Salaam

URT (2005). The Environmental Management (Environmental Impact Assessment and Audit) Regulations, 2005, Government Notice 346.

URT (2006). A Study to Establishing Mechanism for Payments for Water Environmental Services for the Rufiji River Basin in Tanzania. Revised Report. Available at: http://easternarc.or.tz/downloads/Thematic-strategies/Water%20PES%20strategy.pdf] site visited on 11/09/2010] site visited on 25/7/2010.

URT (2006). National Livestock Policy (Dar es Salaam, , 2006)

URT (2008). The Environmental Management (Strategic Environmental Assessment) Regulations.

URT (2009). The Public Health Act, 2009, Act Supplement no. 1, of 20th March 2009 to the Gazette of the URT No. 12, Vol. 90. 2018

URT (2009). The Water Resources Management Act, Supplement No. 11 May 2009, to the Gazette of the Republic of Tanzania No. 20, Vol. 90.

URT (2010). Tanzania National Website (2010). http://www.tanzania.go.tz/water.html] site visited on 25 June 2020.

URT (2014). Second national communication to the united nations framework convention on the climate change (UNFCCC), Vice President Office, Dar es Salaam

URT (2014); Southern Agricultural Growth Corridor of Tanzania (SAGCOT) Investment Project Integrated Pest Management Plan (IPMP); PMO.

URT (2015). National Biodiversity Strategy and Action Plan 2015-2020, Vice Presidents Office Division of Environment, Dar es Salaam. Available at: http://tawiri.or.tz/wp-content/uploads/2017/08/national-biodiversity-strategy-and-action-plan-2015-2020.pdf

URT (2019). Tanzania Water Resources Atlas. Ministry of Water.

URT (2019). Third Report State of Environment Report, Vice President Office, Dodoma

URT (2020). Energy Access and Use Situation Survey in Tanzania Mainland. Ministry of Energy.

URT (2020). Tanzania Communication Regulatory Authority. Quarterly Report.

URT (2020). Water sector status report, Ministry of Water of Tanzania

URT (1997). National Environmental Policy.

USAID (2018). Climate Risk Profile: Tanzania

Van der Lingen and Hampton I. (2018). Chapter 11: Climate Change impacts, vulnerabilities and adaptations: Southeast Atlantic and southwest Indian Ocean Marine Fisheries; within FAO, 2018, Impacts of climate change on fisheries and aquaculture Synthesis of current knowledge, adaptation and mitigation options.

WHO (2016). WHO Country Cooperation Strategy 2016-2020. WHO Regional Office for Africa. Available at: https://apps.who.int/iris/bitstream/handle/10665/254890/ccs_tza-2016_2020_en.pdf;jsessionid=239B9380D574618AF10288309C50AB27?sequence=1

World Bank (2016). World Bank Environmental and Social Framework. World Bank, Washington DC.

WWF and WCS (2011). Protected Area Spatial Planning for Unguja and Pemba Islands, Zanzibar

Yona, Gloria Kavia (2011). Analysis Of Tanzania's Legislation In The Context Of The International Law Relating To The Protection An Preservation Of Endangered Marine Species. Available at: https://www.un.org/Depts/los/nippon/unnff_programme_home/fellows_pages/fellows_papers/Yona_1011_Tanz.pdf

Other Websites

http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/ipm/more-ipm/en/

https://worldpopulationreview.com/countries/tanzania-population

https://www.cdc.gov/globalhealth/countries/tanzania/default.htm

https://www.ipcc-data.org/guidelines/pages/glossary/glossary_r.html (consulted on 09 July 2020).

https://www.macrotrends.net/countries/TZA/tanzania/life-expectancy#:~:text=The%20life%20expectancy%20for%20Tanzania,a%201.23%25%20increase%20from%202017.

https://www.nbs.go.tz/index.php/en/census-surveys/population-and-housing-census/180-population-projections-for-the-period-of-2013-to-2035-at-national-level#:~:text=The%20national%20projections%20show%20that,with%20a%20population%20of%2089%2C204%2C781).

https://www.who.int/countries/tza/en/

Annex 2: List of Stakeholders Consulted

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Annex 3: Terms of Reference for the Environmental, Social and Climate Specialist for the PCU

Job Title: Environmental, Social and Climate Change (ESC) Specialist

Programme Name: Agriculture and Fisheries Development Programme

Duty Station: **Dodoma**

Reports to: Programme Coordinator

Key Duties and Responsibilities:

- Work closely with the lead agencies (MoA, MLF and MANRLF) as well as the implementing agencies (ASA, TARI, TOSCI, ADC, TAFICO, ZAFICO) to ensure the sustainable implementation of AFDP interventions.
- Work with multi-disciplinary team of Programme implementors, and other experts to support environmentally sustainable crop seed development and fisheries activities which will bring the intended benefits to small scale producers, aquafarmers, artisanal fishers, seaweed farmers and deep sea fishers.
- Establish a Programme level environmental and social management system.
- Prepare a training manual, and carry out training in environmental and social management requirements for implementing agencies.
- In collaboration with the PCU M&E Officer, participate in the socio-economic baseline to be prepared during start up, on which the MTR and Programme Completion performance will be evaluated;
- Ensure that the processes and procedures stipulated in the ESMF are followed by implementing agencies.
- Review ESIA and Project Briefs/ESMPs prepared for individual project interventions to ensure GoT/RGZ and IFAD requirements are well addressed, prior to submission to NEMC and ZEMA.
- Disclose environmental and social safeguards documents as required by SECAP and GoT/RGZ.
- Develop topic-specific management plans which can be easily adapted for each Programme intervention, as appropriate. These include for example: Integrated Pesticide Management Plan, Reservoir Safety Plan, Emergency Preparedness and Response Plan, Waste Management Plan, Chance Find Procedure, Traffic Management Plan (for construction phase);
- Ensure that AFDP activities are in compliance with GoT/RGZ environmental, social and climate-related policies, acts and regulations as well as IFAD's safeguards requirements.
- Oversee all environmental, social and climate-related management requirements in the Programme interventions;
- Oversee environmental, social, and climate resilience performance monitoring.
- Carry out Programme environmental, social and climate results monitoring.
- Supervise the annual internal review process to assess the overall performance, outcomes, and impacts of the Programme in respect of environmental, social and climate aspects.
- Monitor all grievances reported from the various Programme activities, and receive notification of, and documentation relating to the verification, investigation, resolution and communication with complainant.
- Work in close collaboration with other PCU officers and national agencies to facilitate and mainstream environmental and social management into AFDP activities;
- Support the Programme Coordinator in communications and compilation of knowledge in sustainable crop seed development and fisheries activities, facilitating workshops and

reaching out to experts and other organisations engaged in crop seed development and fisheries in Programme regions to share experiences and knowledge.
- Support the Programme Coordinator in preparing reports on environmental, social and climate performance for submission to the Programme Steering Committee and IFAD.
- Perform other duties assigned by the Programme Coordinator.

Qualifications, Skills and Experience:
- MSc/BSC in Environmental Sciences, Environmental Engineering, Natural resources management or related fields; with at least 8/10 years of experience;
- Thorough knowledge of GoT/RGZ and IFAD guidelines and IFC/WB EHS guidelines and procedures in environmental and social safeguards, environmental and social impact assessment and analysis, environmental monitoring and auditing;
- Experience in effective stakeholder engagement and grievance redress systems;
- Practical experience in application of environmental and social management approaches in the agricultural and fisheries sectors;
- Experience with adapting agricultural and fisheries practices to local biophysical and social conditions;
- Fluency in spoken and written English is essential;
- Excellent presentation and group moderation skills.

Annex 4: Screening and Categorisation of AFDP Interventions

The table below presents the screening, categorisation and justification for categorisation for the various interventions and activities to be undertaken under each subcomponent.

Table A4-1: Screening and Categorisation

Component/ Subcomponent Interventions	Activity categorisation		Number of studies	Unit cost	Cost in US$	Justification	Remarks
	GOT	SECAP					
Component 1. Enhanced productivity of crop seeds and fisheries							
Subcomponent 1.1 Crop seed systems development: National seed demand and supply coordination, Innovation development and Early Generation Seed production; Basic seed multiplication; Seed certification							
Irrigated fields as seed farms <100ha in size including: laboratory, seed dryer, processing plants, workshops for farm equipment maintenance, water reservoirs, and seed treatment and storage facilities for produced seed, and boreholes	B1	B	2	10,000	20,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018 for large scale cultivation between 50-100ha. SECAP categorisation based on irrigated fields <100ha	ASA plans to irrigate 2 of their farms. One is located at Msimba Morogoro and the other at Kilimi Nzega Tabora. Each farm will be <100Ha in size. Various facilities will be constructed at these farms including drilling of boreholes
Irrigation schemes for EGS, each approx 25ha in size including: laboratory, workshops for farm equipment maintenance, water reservoirs, seed treatment and storage facilities, and boreholes.	B2	B	2	7,000	14,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018 for large scale cultivation between 50ha-10ha. SECAP categorisation based on irrigated fields <100ha	TARI irrigation facilities for EGS: 25Ha at Ilonga-Kiloso (Morogoro) and 25 ha at Selian, incl. construction of water reservoirs, pipes and fittings, drilling boreholes (150 mm steel, 150 m deep), water pumps (number to be determined), and installation of power sources

Component/ Subcomponent Interventions	Activity categorisation		Number of studies	Unit cost	Cost in US$	Justification	Remarks
	GOT	SECAP					
Seed Testing Laboratories (infrastructure & equipment) Seed certification (field and lab control, electronic systems for seed authentication)	B1	B	3	10,000	30,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018. SECAP does not list laboratories, but impacts are generally known and site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures, so categorised as Category B.	TOSCI plans to construct 2 new labs, at Morogoro and Mwanza, and rehabilitation of existing seed laboratory at Arusha. The original plan to construct a training facility has been abandoned.
Subcomponent 1.2: Fisheries and aquaculture development: Development of sustainable marine fisheries production system; Increasing aquaculture productivity and output; Increasing mariculture productivity and output							
Mainland: Fishing vessels x4 (25m) for deep sea fishing, fish processing and storage >50T /day	A	A	1	40,000	40,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018. SECAP categorisation based on risks to biodiversity in sensitive natural ecosystems, and use of natural resources where little data exists on sustainability, exceeding carrying capacity and sustainable yield and risks to overfishing, capture of non-target species, habitat damage.	According to the First Schedule of the EIA Regulations, large scale fisheries fall into B1. Discussions with NEMC confirmed this activity would be Category A.
Zanzibar: Fishing vessels x4 (18m) for deep sea fishing, fish processing and storage <50T /day	A	A	1	40,000	40,000	Categorisation based on EIA Regulations of Zanzibar. SECAP categorisation based on use of natural resources where little data exists on sustainability, exceeding carrying capacity and sustainable yield and risks to overfishing, capture of non-target species, habitat damage.	
Support to artisanal fishing: provision of fishing gear to artisanal fishers (90 FADs)	B1	B	1	10,000	10,000	Not listed TZ or ZNZ Regulations. SECAP considers artisanal fisheries where information on fish stocks, fishing effort and sustainable yield as Category B. This information is available for inshore areas.	Cumulative impacts of 90 FADs. Due to numbers involved, categorisation and cost revised upwards
Aquaculture demonstration centres - at 3 ADC sites, incl borehole and one water supply system at Kingolwira	A	B	3	15,000	45,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018 for large scale fisheries [small scale ≤500 m2, medium scale 500-600 m2, large scale >600 m2]. SECAP categorisation based on total area of ponds being <50ha	There are 3 ADCs centers. One at Kingowira, another at Mwamapuli Igunga and third at Rubambagwe Nzega. 10 functional and 6 nonfunctional ponds to be rehabilitated (200m2); construction

Component/ Subcomponent Interventions	Activity categorisation		Number of studies	Unit cost	Cost in US$	Justification	Remarks
	GOT	SECAP					
							of 15 broodstock ponds,7 breeding ponds and 52 grow out ponds all 2000 m2; and 12 construction of nursery ponds (600m2)
Additional Borehole at Boma Road for Kingolwira ADC	B1	B	1	10,000	10,000	GOT categorisation as per First Schedule of the EIA and Audit (Amendment) Regulations of 2018 refers to abstraction of groundwater for bulk supply. Here borehole to be used only for irrigation, not for bulk supply. Hence categorisation considered B1. Groundwater availability considered to be adequate in this area (minimal risk of aquifer depletion). Therefore intervention falls under SECAP Category B.	The center at Boma road in Morogoro is part of Kingolwira but since it is at a separate location a borehole will be drilled thus separate EIA/Project brief
Tissue culture nursery in Unguja, incl. seaweed technologies and demonstration farm	n/a	B	1	7,000	7,000	Categorisation based on EIA Regulations of Zanzibar	1 sea weed tissue culture nursery established and operationalised in Unguja. Ths will be in the Indian ocean where Tissue Culture technology will be demonstrated to seaweed farmers
Mariculture training centres x 2 (Unguja and Pemba) <360 students	n/a	B	2	7,000	14,000	Categorisation based on EIA Regulations of Zanzibar	The maricultre training centres will be like schools where people will gather and receive trainings/lecture on mariculture farming then visit demonstration sites in the sea where seaweed will be grown
Component 2. Improved market access, value addition and private sector development							
Subcomponent 2.1. Quality seed use and business development: Zonal multi-stakeholder innovation platforms. Promoting offer and access to improved seeds. Promoting awareness and demand for improved seeds							
Distribution networks, linkages between agrodealers and farmers to facilitate access to improved seeds	n/a	C	0	0	0	Does not involve activities that require environmental/social analysis	

Component/ Subcomponent Interventions	Activity categorisation		Number of studies	Unit cost	Cost in US$	Justification	Remarks
	GOT	SECAP					
Promotion of use of improved varieties and CSA practices (targeted support to extension)	n/a	C	0	0	0	Does not involve activities that require environmental/social analysis	
Support FO for services for member access to inputs and markets	n/a	C	0	0	0	Does not involve activities that require environmental/social analysis	
ICT platforms for dissemination of information on seed availability (improved varieties and quantities)	-	B	1	7,000	7,000	ICT and associated activities not listed in TZ or ZNZ Regulations or SECAP. Here considered to be Category B since scale and magnitude not expected to be significant.	Issues of e-waste. May require ESMP
Sub-component 2.2. Fish market development and value addition: Reducing post-harvest losses. Private-Public-Producer partnerships (4Ps) joint venture for deep sea fishing. Increasing value/income from aquaculture production							
Ice plants for smallscale fishers x 8 (cap <50T/day)	B1	B	8	7,000	56,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018 - industrial fish processing and storage >10T/day and <50T/day. SECAP categorises agroprocessing facilities as Category B. In addition, impacts are generally known and site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures.	There are 4 landing sites. Two will have fish markets constructed with cold rooms and ice making plants. 1 market at Bagamoyo has EIA certificate issued. So, EIA will done for 1 market at Kipumbwi, EIA for 3 cold rooms and EIA for 8 Ice making plants. Here ice plants, electric driers and cold storage categorised as B1, but likely to be considered B2 due to scale and target beneficiaries
Cold chain: Cold storage facilities (40 t/facility) x2 Refrigerated trucks x2	B1	B	2	7,000	14,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018 - industrial fish processing and storage >10T/day and <50T/day. SECAP categorises agroprocessing facilities as Category B. In addition, impacts are generally known and site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures.	

Component/ Subcomponent Interventions	Activity categorisation		Number of studies	Unit cost	Cost in US$	Justification	Remarks
	GOT	SECAP					
Electric driers for small pelagics	B1	B	4	7,000	28,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018 - industrial fish processing and storage >10T/day and <50T/day. SECAP categorises agroprocessing facilities as Category B. In addition, impacts are generally known and site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures.	
Construction of fish market at Kipumbwi, incl. storage and ice plant	B1	B	1	10,000	10,000	GOT categorisation based on First Schedule of the EIA and Audit (Amendment) Regulations of 2018 - major urban market. SECAP is not specific on categorisation of markets, but here impacts are generally known and site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures.	
Dagaa solar powered drying racks x80	n/a	B	1	10,000	10,000	Categorisation based on EIA Regulations of Zanzibar. SECAP categorises agroprocessing facilities as Category B. In addition, the interventions are small in size, impacts are generally known, are site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures.	Cost adjusted upwards to accommodate number
Solar drying tents for seaweed and machines for grinding dried seaweed x10	n/a	B	1	10,000	10,000	Categorisation based on EIA Regulations of Zanzibar. SECAP categorises agroprocessing facilities as Category B. In addition, the interventions are small in size, impacts are generally known, are site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures. 1 ESMP should suffice for all 10 dryers	

Component/ Subcomponent Interventions	Activity categorisation		Number of studies	Unit cost	Cost in US$	Justification	Remarks
	GOT	SECAP					
Fish feed mills	n/a	B	1	7,000	7,000	Categorisation based on EIA Regulations of Zanzibar. SECAP categorises agroprocessing facilities as Category B. In addition, the interventions are small in size, impacts are generally known, are site specific, can be readily remedied by appropriate preventive actions and/or mitigation measures.	Number not known. Assume one ESMP will suffice for all.
Component 3. Programme Management and Coordination							
Subcomponent 3.1: Policy engagement and institutional strengthening							
Institutional reforms in public institutions	n/a	C	0	0	0		
Development of aquaparks (aquaculture cluster growth model)	n/a	C	0	0	0		
Subcomponent 3.2 Programme Management and Coordination							
Programme management, coordination, monitoring and evaluation (M&E), communication and knowledge management	n/a	C	0	0	0		
Subcomponent 3.3 Emergency recovery and resilience post COVID-19							
Specific interventions not identified at this time	n/a	n/a	0	0	0		
TOTAL ESTIMATED COST FOR ESIA STUDIES AND PROJECT BRIEFS, NEMC REVIEW AND AUDITS			36		372,000		

Annex 5: Guidelines for an Integrated Pest Management Plan

This guideline is adapted IFAD's Social Environmental and Climate Assessment Procedures (SECAP 2017) Guidance Statement #2 on Agrochemicals.

Introduction

The use of agrochemicals has been critical to raising crops for food. Agrochemicals include fertilizers, liming and acidifying agents, soil conditioners, pesticides, and chemicals used in animal husbandry such as antibiotics and hormones. "Pesticides" are chemicals that are used to kill or control pests. In agriculture, this includes herbicides (weeds), insecticides (insects), fungicides (fungi), nematocides (nematodes), and rodenticides (vertebrate poisons). Different categories of pesticides have different types of effects on living organisms. In agriculture, pesticides are used to kill pests that damage crops. By their nature, pesticides are potentially toxic to other organisms, including humans, and need to be used safely and disposed of properly. Absence of safety precautions can result in accidents, sometimes with serious consequences. Those at greatest risk are those who experience the greatest exposure — these typically being smallholder farmers, farm workers and their families. These groups are also often poor since bigger farms are more likely to provide training on pesticide risk avoidance to their workers. The unsafe use of agrochemicals also poses serious negative risk on the environment (soil, water, plant, wildlife, microorganisms, etc).

Where there is a significant increase in the use of agrochemicals, IFAD requires a pest management or mitigation plan to be prepared. While IFAD projects promote the use of agrochemicals directly, as a project component for increased crop productivity, or – more commonly – indirectly, by increasing the availability of short-term credit for farm inputs or water for irrigation, which encourages increased use of agrochemicals. IFAD emphasises the need for careful selection of the type of agrochemicals and management of their use (timing, dosage, mode of application, etc.) can reduce to acceptable levels the environmental risks they pose while providing the needed benefits for increased production with lower financial and health risk costs.

Policy, Legislative and Institutional Frameworks for Pest Management in Tanzania

The following description of the policy and regulatory frameworks for pest management in Tanzania is taken from the IPMP prepared for the PMO's SAGCOT Investment Project[49]

National Policies and Legislation

National Environmental Management Policy (1997)

The National Environmental Management Policy (NEMP) is set to achieve the following in terms of environmental management: "Integrated multisectoral approaches necessary in addressing the totality of the environment; Fostering government-wide commitment to the integration of environmental concerns in the sectoral policies, strategies and investment decisions; Creating the context for planning and coordination at a multisectoral level, to ensure a more systematic approach, focus and consistency, for the ever-increasing variety of players and intensity of environmental activities".

[49] URT (2014); Southern Agricultural Growth Corridor of Tanzania (SAGCOT) Investment Project Integrated Pest Management Plan (IPMP); PMO.

The policy has identified six key major environmental issues in the country. These are land degradation, water pollution, air pollution, loss of wildlife habitats, deterioration of aquatic systems and deforestation. Hence the policy has the following objectives with respect to environmental management in agriculture:

- Ensure sustainability, security and equitable and sustainable use of natural resources;
- Prevent and control degradation of land, water, vegetation, and air;
- Conserve biological diversity of the unique ecosystems the country; and
- Raise public awareness and understanding of the essential linkages between environment and development, and
- Promote individual and community participation in environmental action.

National Agriculture Policy 2013

The policy acknowledges that increased use of modern inputs (fertilizers, agrochemicals, seeds, farm machinery) is a pre-requisite for achieving sufficient agricultural production and growth to meet economic development, poverty reduction and food security and nutrition goals. It further notes that prevalence of crop pests and diseases is creating a great economic risk to crop development in Tanzania. Challenges that are affecting effective control of pests and diseases in the country include inadequate capacity for pest surveillance; inadequate pest risk analysis and bio-security measures; weak pest monitoring and control mechanisms; limited management options for pests and diseases; and weak sanitary and phytosanitary services. To address this, the Policy specifically states that:

- The Government shall enforce laws and legislation to safeguard farmers from the supply of substandard inputs;
- Input production, procurement and distribution shall be strengthened;
- Private sector participation in multiplication of pre-basic and basic seed shall be promoted;
- Domestic production, multiplication and distribution of agricultural inputs shall be promoted to involve both public and private sectors;
- Farmers shall be supported to access modern inputs;
- Agro-chemical and fertilizer manufacturing industry shall be developed.
- Pest and disease surveillance, system and control mechanisms shall be strengthened;
- The Government shall collaborate with neighbouring countries, international organizations and other institutions dealing with plant health services in combating pests and diseases outbreaks;
- Pest free areas shall be protected from introduction of pests of quarantine importance; and
- The Government shall strengthen sanitary and phytosanitary, quarantine and plant inspectorate services.

The Environment Management Act (2004)

This Act requires establishment of sector environmental management Units at each Ministry, with the responsibility of ensuring compliance on environmental matters. The Sector Environmental Units have, among others, the responsibilities of:

- Advising and implementing policies of the government on the protection and management of environment
- Coordinating activities related to the environment of all persons within the Ministry
- Ensure that environmental concerns are integrated into the Ministry development planning and project implementation in a way which protects the environment
- To prepare and coordinate the implementation of environmental action plans at the national and local levels as required under this Act
- To refer to the council any matter related to the enforcement of the purposes of this Act

- To ensure that sectoral environmental standards are environmentally sound.

In relation to agricultural chemicals, the Minister responsible for Environment shall have the power to make regulations pertaining to Persistent Organic Pollutants (POP) and pesticides issues, to ensure that they are in compliance with the Stockholm Convention on POP of 2001 and Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade of 1998.

Plant Protection Act No. 13 (1997)

This Act has made provisions for consolidation of plant protection to prevent introduction and spread of harmful organisms, to ensure sustainable plant and environmental protection, to control the importation and use of plant protection substances, to regulate export and imports of plant and plant products and ensure fulfilment of international commitments, and to entrust all plant protection regulatory functions to the government and for matters incidental thereto or connected therewith. The activities of Tanzania Pesticides Research Institute (TPRI) are incorporated into the Act. In relation to IPM, importation of biological control agents is not allowed unless under the prescribed permit by the Ministry responsible for Agriculture.

The Plant Protection Act 2013 (Draft)

The main objective of this Act is to prevent the introduction or spread of plant disease or pests; provide for phytosanitary control measures; facilitate trade in plants and plant products and to regulate other matters connected thereto. The Act is meant to establish a National Plant Protection Organization (NPPO). The NPPO core function will be to serve as a national contact point for the IPPC and shall develop mechanisms for consultation between responsible authorities for enforcement of the phytosanitary legislation for Tanzania and promotion of integrated pest management and control.

The Pesticide Management Act 2013 (Draft)

An Act to provide for the life-cycle management of pesticides, regulating the manufacture, formulation, importation into and exportation from the country, transport, storage, distribution, sale, use and disposal of pesticides and to regulate other matters connected thereto. This Act will establish the Tanzania Pesticides Control Authority (TPCA) responsible for monitoring the trade and use of pesticides, and collecting statistical and other information concerning the import, export, manufacture, distribution, sale and use of pesticides, about pesticide residues and safe use. The act prohibits the importation, manufacturing, formulating, transportation, distribution, exportation or sell of banned, obsolete pesticides under PIC and POPs and any other pesticide banned or severely restricted in the country of origin under any circumstances within the country or any pesticide for which is not in the category/group currently under use.

In relation to IPM the authority suggests development and availability of safer alternatives to existing pesticides as per latest global research and development without compromising the importation of biological control agents as allowed in the Biological control agents protocol developed within the Plant Protection Act of 1997.

Pesticides Control Regulations GN 193 of 1984

The objects of these Regulations are – (i) to ensure the effectiveness of pesticides used in Tanzania for the production of food and fibre and for the protection of public health and safety: (ii) to protect against possible harmful effects of pesticides including: (a) impairment of the health of persona

handling pesticides or using or consuming products or substance treated with pesticides; (b) impairment of the health of domestic animals including honey bees from direct application or pesticides or from the consumption of plant or animals treated with pesticides (c) damage to cultivated plants from direct application or pesticides or from persistent soil residues and (d) damage to the natural environment including impairment of the health of wildlife and contamination of waterway lakes and other water bodies.

Plant Health Act (2020)

A Plant Health Bill was passed in Parliament in May 2020, and is in the process of being formally enacted. It is intended to:

- Consolidate the Plant Protection Act and the Tropical Pesticides Research Institute Act and put in place a consolidated legal framework for plant health and pesticides.
- Establish the Tanzania Plant Health and Pesticides Authority which shall be the main regulatory body for pesticides and plant health.
- Introduce a legal framework to facilitate competition and efficiency in plants and plant products trade in Tanzania and internationally.
- Introduce safeguarding of human health and the environment / ecosystem by ensuring sustainable and efficient management of pesticides, plant health and phytosanitary issues with an effective monitoring and surveillance system of inspectors and reputable laboratory analysis.

Institutional Framework

Key Ministries

The Ministry of Agriculture (MoA) and Ministry of Livestock and Fisheries (MLF) in Tanzania Mainland, and the Ministry of Agriculture, Natural Resources, Livestock and Fisheries (MANRLF) in Zanzibar advocate the use and dissemination of IPM approaches through the agricultural extension services. On the aspects of migratory pests and diseases, MoA and MLF cooperate fully with the neighbouring countries (through regional initiatives on outbreak pest control) in the collective effort to control the damage of such pests. MoA also has in place supervisory and regulatory instruments to register, license, monitor and supervise manufacturers, importers, distributors and users of agricultural inputs such as pesticides, fertilizers and herbicides.

Environmental Management Unit at MoA and MLF

Environmental Management Units have been established at the MoA and MLF. The functions of the Units are: to monitor compliance with the requirements of Environmental Management Act (2004) within the Ministries; to advise on policy, legal reviews on environmental management in the agricultural sector in collaboration with Vice President's Office (Division of Environment); to monitor environmental protection compliance in the agricultural, livestock and fisheries sectors; and to oversee the implementation of agricultural, livestock and fisheries strategies in order to minimize adverse social-economic impacts due to agricultural activities.

Plant Health Services Unit of MoA

Plant Health Services (PHS) is a unit in the Ministry of Agriculture which deals with Registration of pesticides and control of Migrant pests.

Plant Protection Division, MANRLF

The MANRLF maintains the Plant Protection Division (PPD) to monitor, guide and strengthen plant health services in Zanzibar. The Division's mandate includes phytosanitary control, plant quarantine, pesticide monitoring, and the provision of training in the safe use of pesticides.

Tropical Pesticides Research Institute (TPRI)

TPRI's mandate is to undertake, promote, evaluate and disseminate findings on the management of pests, pesticides and biological diversity. TPRI is engaged in research and services on management of pests, pesticides and biodiversity to enhance food security, safeguard human health and for facilitating internal and external trade for sustainable development. The Institute is semi-autonomous operating through the MOa.

International Conventions and Regional Agreements with implications on the Use of Agrochemicals

- Basel Convention,2006. The Basel Convention on the Control of Trans-Boundary Movements of Hazardous Wastes and Their Disposal was concluded in Basel, Switzerland, on March 22, 1989, and entered into force in May 1992. Now ratified by 149 countries including 32 of the 53 African countries, the focus of this convention is to control the movement of hazardous wastes, ensure their environmentally sound management and disposal, and prevent illegal waste trafficking (UNEP, 2006).
- Rotterdam Convention, 1999,aims to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use. Governments began to address the problem of toxic pesticides and other hazardous chemicals in the 1980s by establishing a voluntary Prior Informed Consent procedure (PIC). PIC required exporters trading in a list of hazardous substances to obtain the prior informed consent of importers before proceeding with the trade.
- The FAO International Code of Conduct on the Distribution and Use of Pesticides (2002). It establishes voluntary standards for public and private institutions involved in the distribution and use of pesticides. The Code sets out a vision of shared responsibility between the public and private sectors, especially the pesticide industry and government, to ensure that pesticides are used responsibly, delivering benefits through adequate pest management without significant adverse effects on human health or the environment.
- FAO Guidelines on Good Practice for Ground Application of Pesticides, 2001. FAO produced an expanded series of pesticide application equipment related guidelines to cover the application of pesticides using any ground-based field crop sprayers, including operator carried and tree and bush crop sprayers.
- The Safety and Health in Agriculture Convention (ILO 184). This was adopted by the conference of the International Labour Organization (ILO) addresses the protection of workers in the agricultural sector. More people work in agriculture than in any other sector, more workers are injured in agriculture than in any other sector, and pesticides are a major cause of injury and death. In addition, more children work in agriculture than in any other sector and they are differently and particularly vulnerable to the toxic effects of chemicals such as pesticides. A specific section of the convention deals with the sound management of chemicals and advises governments to adopt good management practices for chemicals, to inform users adequately about the chemicals they use and to ensure that adequate mechanisms are in place to safely dispose of empty containers and waste chemicals.
- Africa Stockpiles Programme (ASP): The Africa Stockpiles Programme (ASP) focused on obsolete pesticides and their associated waste. The programme addressed the major issues

in prevention of accumulation of obsolete pesticides and its associated wastes by putting in place an empty pesticides container maintenance strategy and the ASP sustainability Roadmap. The strategy identifies the mechanism of dealing with empty pesticide containers and provides the framework of up-scaling the process through the stakeholder partnership and cost sharing initiatives. The strategy addressed the following: increased awareness amongst pesticide users on the best practice of handling pest containers; sensitization of the communities on risks of reusing empty pesticide containers for other purposes; provision of training and support of local agricultural authorities to promote safer use of pesticides; quantification of the build-up of empty pesticide containers in the government stores and the farming communities; and establishment of the recycling facilities of the pesticide packaging for which sustainable disposal/recycling options are required.

Impacts of Agrochemicals

Several potential environmental and social consequences are associated with the use of agrochemicals:

- *Air pollution*: Pesticides can contribute to air pollution as pesticide drift occurs when pesticides suspended in the air as particles are carried by wind to other areas, potentially contaminating them. Ground spraying produces less pesticide drift.
- *Water pollution* from the use of agrochemicals may affect both groundwater and surface water through leaching and run-off. High concentrations of nitrates and phosphates can lead to eutrophication in rivers, lakes and coastal waters. High levels of nitrogen and phosphorus cause the depletion of oxygen in lakes and reservoirs by excessive algal and bacterial growth (eutrophication), eventually reducing aquatic life. The problem is aggravated by organic effluents, especially human sewage, and eutrophication in drinking water reservoirs is a public health concern. In addition, the toxic compounds contained in some pesticides and herbicides may pollute groundwater and surface water, posing threats to both human and animal health, including marine and freshwater fish.
- *Hazards to humans and animals*: Improper application of pesticides, overuse and neglect of safety periods between application and harvest often result in high residues in harvested crops and processed food and unnecessary exposure of farmers and their families to toxic material. Contact can be direct (skin or eye) or through inhalation or ingestion. Agrochemical residues are also known to persist in contaminated clothing. Pesticides may move off target and poison fish, cattle, beneficial insects, pollinators, soil organisms and nearby communities. Pesticides may have acute or chronic toxic effects. While people are aware of their acute effects, which vary from mild irritation to death, their chronic toxicity results from the accumulation of small amounts of residue in consumed food – of both plant and animal origin – in the human body over a long period, leading to various toxicity symptoms and diseases.
- *Bioaccumulation* implies that toxic levels increase over time and along the food chain (e.g. in carnivorous mammals or predatory fish). The bioaccumulation of toxins resulting from agrochemical use is a very serious issue, causing biodiversity loss and disease in both animals and humans, especially in poor rural communities that rely on wild food. Bioaccumulation is also very serious for the marine and freshwater life that is critical to a large proportion of the poor.
- *Pest resurgence*: Misuse of pesticides can cause elimination or suppression of the natural enemies that keep insect pest populations under control and at economically acceptable levels. This suppression leads to outbreaks of secondary pests previously not considered important. This not only affects crops, but can also affect livestock and community health.
- *Pest resistance*: The misuse of pesticides can lead to the build-up of resistance in insect pests, pathogens and weeds. This resistance has great economic and ecological consequences

because increasing amounts of more expensive and toxic pesticide formulations are required to achieve pest control. In some areas of the world, pesticide overuse has created a population of resistant pests, which threaten subsistence and cash crops, livestock and human health.

- *Loss of bees and other beneficial insects*: Pesticides can kill bees and other beneficial insects that are essential for the pollination of indigenous plants, honey production, etc., thus causing negative impacts on the food production, livelihoods and incomes of poor rural communities.
- *Soil fertility loss* may be related to excessive or inappropriate application of chemical fertilizers, which could result in soil salinization, sodicity or acidification, depending on the inherent soil chemistry, the quality of irrigation water and other external factors (such as acid rain). Soils may also lose their fertility due to the lack of, or insufficient application of fertilizer, which causes a decline in natural nutrient availability. Degraded agricultural land that has lost its fertility may retain its capacity to recover through fallowing. However, beyond a critical point, fertility loss may become an irreversible phenomenon. While inorganic fertilizers may improve soil fertility, various forms of organic inputs such as manure, also improve the soil structure, which enhances microbial activity, air and water infiltration and retention.
- *Soil loss* is caused by wind and water erosion on lands that have been overgrazed or overutilized for crops. Marginal and poor soils are particularly vulnerable to erosion, especially if soil fertility is depleted and natural vegetation fails to regenerate adequately. Loss of topsoil and valuable organic matter is usually irreversible.
- *Greenhouse Gases:* Agrochemicals are among the most important secondary sources of greenhouse gas (GHG) emissions in the agriculture sector.
- *Climate change* is expected to affect the population and life cycles of several pests and diseases, mainly through the influence on their distribution and expansion ranges. More invasions by introduced or migrated alien species of pests and diseases are expected, with higher intensities of infection. However, the impact of climate change will be most clear through its effect on crops, as crops growing under various types of climate stress will be more susceptible and vulnerable to pests and diseases. Anticipated effects include reduced tolerance and resistance levels in crops, and losses in biodiversity, especially of wild crop species needed for resistance breeding. Because of higher pest and disease pressure, more pesticides will be applied, which might lead to increased misuse and overuse if not well managed (World Bank, 2009). Environmental instability and increased incidence of extreme weather may also reduce the effectiveness of pesticides on target pests, or result in more injury to non-target organisms. However, climate change may affect biological control negatively or positively.

Potential Mitigation Measures

The use of agrochemicals can also be reduced or eliminated by promoting indigenous farming practices, such as the cultivation of locally adapted crops and varieties, which are often resistant to local pests and diseases; the use of locally available natural biopesticides and pest-repellent crops, with adapted cultivation strategies (seeding periods and methods, etc.); the use of natural on-farm animal and green manure; and organic farming techniques. Ensuring diversity in the crops and varieties cultivated on a farm, especially indigenous crops, reduces the risk of high-level pest infestations and disease epidemics and facilitates enhanced ecosystem services, including through pollinators and active soil fauna and flora.

Some measures for management of agrochemicals are described here:

Fertilizer management:

- Ensure that dressings do not exceed recommended doses.
- Reduce leaching through appropriate choice of fertilizer to suit soil conditions, split applications and fertilizer placement.
- Reduce run-off through incorporation of fertilizer into soil, timing of applications to avoid erosive rains, and soil and water conservation measures.
- Limit nitrate use in sensitive watersheds serving urban areas.
- Select non-ammonium sources of nitrogen such as urea.
- Carry out liming (usually to pH 5.5 for tropical crops).
- Explore the potential for increasing production without the use of chemical fertilizers, especially using indigenous technologies, including organic fertilizers, and supporting integrated soil fertility systems.
- Promote community education on improving indigenous practices to maximize production, avoiding chemical fertilizers in favour of local options that are available on farm.
- Support crop management practices that increase the nutrients available to crops, including by: (i) using more organic and less inorganic fertilizer; (ii) increasing the efficiency of fertilizer use through appropriate fertilizer selection, timing and split applications; (iii) increasing nutrient recycling using crop residues and livestock grazing after crop[4] harvest (mixed farming); use of nitrogen fixing trees, where feasible (agroforestry); and (iv) improving rotations (e.g. inclusion of legumes, multicropping).
- Monitor receiving water courses and soil for fertility to avoid overapplication of agrochemicals.

Pesticide management:

- The project should be explicit about the pesticides it proposes, including those that farmers are expected to use when credit for input purchases is made available. **For projects that entail significant pesticide use or have the potential to result in increased pesticide use, a pesticide management plan is prepared, either as a stand-alone document or as part of the Environmental and Social Impact Assessment** (**ESIA) or ESMP.** The most important criteria for assessing the environmental impact of a pesticide **are its toxicity level and the degree of biodegradability. Consideration should also be given to residue-level guidance** for countries that intend to export crops. Unregistered, restricted-use or experimental-use pesticides should be avoided, unless their use in the project has been reviewed and approved by the Food and Agriculture Organization of the United Nations (FAO)/World Health Organization (WHO) Joint Meeting on Pesticide Residues.
- Pesticides in WHO Class la and Class lb[5] should generally be avoided.
- For general use, the formulated product should be at a low enough concentration to be in at most a WHO Class II. Low-toxicity formulations should be favoured: from least toxic to most toxic, the options are granule, dust, wettable powder, flowable, emulsifiable concentrate, ultra-low volume and fumigant.
- Low-concentration granulars, seed dressings, bait formulations and pheromone traps generally present the least hazard to users and are especially suitable for small-scale farmers unfamiliar with pesticide use; they cause minimal environmental contamination and minimal adverse effects on non-target organisms.
- Aircraft application should be avoided whenever possible, and used only when speed in covering large areas is essential, such as in the emergency control of migratory pests.
- Safe application equipment and servicing facilities should be promoted, along with correct calibration of equipment. Training should be provided for personnel and farmers applying the pesticides.
- Protective clothing, including masks, gloves and boots, should be provided or promoted, especially for pesticides that are absorbed through the skin. However, improper use of

protective clothing may be even more hazardous than doing without protection: unless it is washed, protective clothing can become saturated with pesticides – such as in the lining of boots and gloves – and can greatly increase pesticide absorption. Training should be provided.

- Training is crucial to the safety, use and cost-effectiveness of pesticides, and is recommended for inclusion in any project that increases the availability or accessibility of pesticides. A range of actors will require education: users, operators, extension officers, retailers, health workers treating cases of poisoning, and legislators in pesticides law.
- Application guidelines for pesticide use should be made clear to the borrowing country, and a legal document should be drawn up providing assurance that the guidelines will be followed.
- All the pesticides used in the project should be properly labelled, and all labels and application guidelines should be provided in the local language.
- Monitor water courses, soil and community health on a regular basis to ensure that pesticide concentrations are within legal environmental and health limits.

Integrated Pest Management Approach

An Integrated Pest Management Plan (IPMP) is a tool to prevent, evaluate and mitigate the occurrences of pesticides or pesticide breakdown products. The IPMP includes components promoting prevention and developing appropriate responses to the detection of pesticides or pesticide breakdown products, and provides responses to reduce or eliminate continued pesticide movement to groundwater and surface water. It encourages the use of a combination of pest management techniques, such as integrated pest management to suppress pest populations in an effective, economical and environmentally sound way, and minimize adverse effects on beneficial organisms, humans and the environment.

Whenever an IFAD project includes the purchase, promotion or use of agrochemicals, the following should be addressed:

- Identification of specific crops and their existing or potential pests requiring pest management:
- Investigate the options for using available safe pesticides and non-pesticide alternatives such as natural deterrents.
- Identification of nationally approved and available pesticides, and management and application techniques for their judicial and effective use to protect human and environment health.
- Assessment of local and national capacity for the safe handling, use, storage, disposal and monitoring of agrochemicals: Identify training needs for regulatory institutions, agro-dealers, extension agents and farmers, and assess the needs for building community environmental awareness.
- Development of an IPM programme for minimizing/optimizing pesticide application, including – if possible – provisions for monitoring residues on crops and in the environment. The programme should include IPM strategies for enhancing the resilience of vulnerable agroecosystems to climate variability and changes, and the adaption of IPM practices to deal with pests in different climatic conditions (World Bank, 2009).
- Reduction of environmental impact: As fertilizers have a high carbon footprint, it is prudent to enhance the efficiency of nitrogen use (by minimizing losses caused by erosion, leaching and volatilization) and to identify alternative sources using integrated nutrient management strategies, such as biological nitrogen fixation, animal manure and the recycling of nutrients in crop residues (Lal, 2004).

Thus the key steps in developing an integrated pest management plan are:

i. Evaluate pests' impact before control programs are implemented, to identify pests, size of problems and possible natural controls. This includes describing:
    a. Common pest problems and estimated economic impact, current and proposed practices, including non-chemical preventative techniques, biological and chemical control. Is optimum use being made of agro-ecosystem management techniques to reduce pest pressure and of available non-chemical methods to control pests? Do farmers and extension staffs get sufficient information about IPM approaches that reduce reliance on chemical control?
    b. Relevant IPM experience within the project area, district or country, existing IPM practices, projects/programs, research
    c. Discrepancies where the current or proposed practices are not consistent with the principles of an IPM
    d. approach, to be able to propose a strategy to bring pest management activities into line with IPM.
ii. Evaluate non-pesticide management options, including a range of preventive measures and alternative pest control methods (physical, mechanical, and biochemical)
iii. Evaluate whether synthetic pesticides are necessary or not, whether less toxic varieties are available for the purpose, and how to minimize exposure for users and the environment

Note that risk is a function of both toxicity and exposure. Reducing risk means (1) selecting less toxic pesticides and (2) selecting pesticides that will lead to the least human exposure before, during and after use.

Pesticide Management

1. Screening Pesticides

The use of any pesticide should be based on an assessment of the nature and degree of associated risks, taking into account the intended users. With respect to the classification of pesticides and their specific formulations, reference is made to the World Health Organization's *Recommended Classification* of *Pesticides* by *Hazard and Guidelines to Classification.* The following criteria apply to the selection and use of pesticides:

a) They must have negligible adverse human health effects.
b) They must be shown to be effective against the target species.
c) They must have minimal effect on non-target species and the natural environment. The methods, timing, and frequency of pesticide application are aimed at minimizing damage to natural enemies. Pesticides used in public health programs must be demonstrably safe for inhabitants and domestic animals in the treated areas, as well as for personnel applying them.
d) Their use must take into account the need to prevent the development of resistance in pests.
e) They do not fall in WHO classes IA and IB, or formulations of products in Class II if (a) country lacks restrictions on their distribution and use; or (b) they are likely be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly.

2. Reduce exposure time or the degree of exposure

Before use

Transporting

- Separate pesticides from other materials being transported
- Avoid private distribution
- Never transport leaking or badly deteriorated containers

- Do not transport food, beverages or animal feed together with pesticides.
- Load and unload pesticides very carefully to minimize the chance of dropping containers.

Packaging

- Follow international and national norms and guidelines
- Use packaging adapted to needs eliminate re-use of packaging materials (even when cleaned, pesticide containers are too dangerous to re-use
- The container for the product shall be of sufficient strength and shall provide all the necessary

35. Protection against compaction, atmospheric moisture, oxidation, loss by evaporation and
36. Contamination to ensure that the product suffers no deterioration under normal conditions of transit and storage, etc.

Storing

- develop strict guidelines for farm level storage
- ensure permanent, well-marked labelling
- follow and respect national norms
- use appropriate language and approved pictograms
- use and respect appropriate toxicology colour codes
- should be located far from human dwellings, and personal use items
- should be sited far from rivers and bodies of water, to prevent chemical contamination from entering and poisoning the water
- should not be sited in an area subject to flooding, especially during seasonal rains
- be secured from public access
- have a warning sign affixed to the exterior door, entrance or gate of the storage facility
- have a floor or base that is protected from pesticide absorption

Labelling

The purpose of a labelling is to convey a message about what the product is, who makes it and how it may be used safely and effectively. Label should specifically indicate:

- Hazard symbol
- Trade and chemical name
- Ingredient statement
- Type of formulation
- Net content of the package
- Purpose for which it is to be used
- Name and address of manufacturer, distributor
- Registration or license number
- Directions for use
- Safety precautions
- Warnings and statements of good practice
- Hazards to humans and domestic animals
- Environmental hazards
- Physical and chemical hazards
- First-aid instructions and advice to health personnel
- Storage and disposal directions
- Warranty statement

During use

- Continuous training for farmers on transportation, storage, application, protective equipment and clothing, mixing of chemicals, disposal of containers, disposal of expired agrochemicals, etc

Pre-application

- Read and understand labelled instructions and any other information provided with either the agrochemical, the application equipment or the protective clothing
- Assess the risks of application to people, animals and the environment and decide what action is necessary to reduce or eliminate them
- Ensure that the user is competent and that he or she has received effective training in application techniques and the precautions to be observed
- Arrange health monitoring as may be necessary for certain hazardous agrochemicals based on their frequency of use
- Check application equipment to ensure that it operates satisfactorily without leaking or spilling and is calibrated for the necessary application rates
- Check that protective clothing and other safety equipment including breathing apparatus,

37. if required, is complete, is of the correct quality and is in good condition. Replace any items that are worn or missing. And is in good condition. Replace any items that are worn or missing

- Decide how the work is going to be done and set up an action plan to cover its implementation, together with any emergencies that may arise.
- Check that weather conditions are satisfactory, particularly to avoid excessive wind speeds and consequent spray drift
- Ensure the safe disposal of empty containers, tank washings and surplus pesticides

During application

- Do not apply agrochemicals without adequate training
- Wear appropriate protective clothing as prescribed on the label or information sheet for handling concentrated products
- Avoid blow-back from granule or powdered materials when transferring container contents into the application unit. A slow, steady release causes least disturbance of air and reduces the risk of particles becoming airborne and being inhaled
- Mix only the correct amount of agrochemical required for a particular task so as to avoid the need to dispose of any surplus.
- Handle containers carefully to prevent gurgling or spillage during pouring into an applicator.
- Pour correctly from large containers with the spout uppermost so as to allow air to flow into the container at the same rate as the contents flow out
- If two or more agrochemicals have to be mixed, ensure that they are compatible and without risk of a chemical reaction that would cause a "tank mix" operator hazard Do not eat, drink or smoke while applying agrochemicals
- Ensure that dangerous practices such as putting a blocked nozzle to the mouth to blow it clear are prohibited. Clean the nozzle with water or a soft probe, such as a grass stem
- Do not allow other workers in the field, particularly when pesticides are being applied.
- Take particular care to observe that children are neither allowed to spray nor are exposed to pesticides
- Take notice of changing weather conditions, such as an increase in wind speed. This would cause drift and could blow the spray towards sensitive areas such as a drinking water supply, resulting in health hazards. It may also blow the spray towards the operator, causing an inhalation hazard.

After use

Know, respect and enforce any exclusion period after application during which humans, livestock, etc., must be kept away from the treated area; assure proper cleaning and rinsing off; and develop a workable monitoring and evaluation system). The following precautions have to be followed after applying the pesticide:

- Thoroughly wash hands, face and neck as well as other parts of the body which may have become contaminated. If gloves have been worn, wash them before removal
- Return unused pesticide to safe storage and safely dispose of empty containers and any surplus in the application equipment
- Decontaminate application equipment by washing it thoroughly. The washings should be drained into a soak-away or similar chamber to be safely confined and without risk to the environment.
- Decontaminate protective clothing by thoroughly washing items such as apron, boots and face shield. Launder the work clothing each day after spraying. Gloves should be washed inside and out and allowed to dry. Respiratory protection equipment should be wiped clean
- Bathe or wash thoroughly again after completing the above four actions.

Disposal of unused and obsolete pesticide, and empty pesticide containers

The safe management and disposal of pesticide-related waste (*unused and obsolete pesticide, and empty pesticide container*) should be provided and coordinated by regulatory authorities, pesticide distributors and suppliers. Other organizations that support and advise pesticide users, such as extension and health promotion services, non-governmental organizations (NGOs), agricultural colleges and schools, also have important roles to play.

MAAIF is responsible for regulating the manufacture, import, distribution and use of pesticides. These responsibilities should be extended to include the management of pesticide related waste products, including empty containers, which are often overlooked.

A mechanism has to be designed to collect all empty pesticide containers from farmers and safely disposed and never reused. It is extremely dangerous to use them for anything else. Consult the pesticide label, the manufacturer, or the manufacturer's representative for specific recommendations regarding container clean-up and disposal.

The management plan has to be prepared when there is the plan to use pesticide to mitigate all the impacts associated with the pesticide using the above-mentioned measures. The implementation of the plan has to be supervised, monitored and audited, and a monitoring plan has to be prepared.

In Summary

The IPMP should include:

i. A description of present, proposed and/or envisaged pesticide use and assess whether such use is in line with IPM principles. Provide purpose of pesticide use, type of products used, frequency of applications, and application methods. Is pesticide use part of an IPM approach and is it justified? Justification of pesticide use under the project should (a) explain the IPM approach and the reason why pesticide use is considered, (b) provide an economic assessment demonstrating that the proposed pesticide use would increase farmers' net profits, or for public health projects, provide evidence that the proposed pesticide use is justified from the best available (probably WHO supported evidence) public health evidence.

ii. An indication of type and quantity of pesticides envisaged to be financed by the project (in volume and monetary value) and/or assessment of increase in pesticide use resulting from the project.
iii. Circumstances of pesticide use and the capability and competence of end-users to handle products within acceptable risk margins (e.g. user access to, and use of, protective gears and appropriate application equipment; users' product knowledge and understanding of hazards and risks; appropriateness of on-farm storage facilities for pesticide).
iv. An assessment of environmental, occupational and public health risks associated with the transport, storage, handling and use of the proposed products under local circumstances, and the disposal of empty containers.
v. Pre-requisites and/or measures required to reduce specific risks associated with envisaged pesticide use under the project (e.g.: protective gear, training, upgrading of storage facilities, etc.).
vi. A selection of pesticides authorized for use, taking into consideration: (a) criteria set at national (if there is any) or international, (b) the hazards and risks and; (c) the availability of newer or less hazardous products and techniques (e.g. bio-pesticides, traps).
vii. A description of activities that require local monitoring during implementation.
viii. A description of activities that require monitoring during supervision visits (e.g. regarding effectiveness of measures to mitigate risks; progress in strengthening regulatory framework and institutional capacity; identification of new issues or risks arising during implementation).
ix. Monitoring and supervision plan, implementation responsibilities, required expertise and budget.

Annex 6: Stakeholder Identification Matrix

Please note:

1. Ratings for the knowledge of issues can fall between unknown to low, medium or high
2. Ratings for the ability to influence the outcome can fall between unknown or mixed to low, medium or high
3. The communication strategy work as follows:
   1 indicates close contact (eg, phone calls, emails, video conferencing, regular face to face meetings);

   2 indicates irregular contact (briefing notes, occasional letters/notification, emails, newsletters);

   3 indicates informing the particular stakeholder through e.g. the media etc.
4. The list of stakeholders is not exhaustive at this point – it is an evolving document so as stakeholders are identified they are added into the document.

Definition of Stakeholder as follows:

1. Primary stakeholders who are directly involved in the development of the AFDP and its implementation;
2. Secondary stakeholders who are not directly involved in the development and/or implementation of the AFDP, but are affected it;
3. Tertiary stakeholders who may comprise key individuals, or groups, who may significantly influence the success of the Programme, but are not directly or indirectly involved in its development and implementation.

1. GOVERNMENT

Stakeholder	Who/What do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Ministries:					
Mainland:					
PMO	Programme Proponent – representing all AFDP interventions and activities	high	high	1	1
Livestock & Fisheries	Fisheries interventions	High	High	1	1
Agriculture	Crop seed development	High	High	1	1

Stakeholder	Who/What do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Vice President's Office	Policy guidance and approvals for environmental compliance	High	High	2	1
Trade and Industry	May Partner in implementation	Medium	Medium	3	2
Financial institutions	May Partner in implementation	Medium	Medium	3	2
District / Local Governments	Implementing agent in collaboration with MLF	High	High	1	1
ZANZIBAR:					
MANRF	Programme Proponent – representing all AFDP interventions and activities	High	High	1	1

2. REGULATORY BODIES

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
NEMC	Review and approval of reports for compliance	High	High	2	2
Plant Health Services (MOA-TZ)	Guidance and Approvals of IPMP	High	High	2	2
Plant Protection Division (MANRLF–ZNZ)	Guidance and Approvals of IPMP	High	High	2	2
Water Basin offices	Water use permits and monitoring	High	High	2	2
DSFA	Approval and Monitoring	High	High	2	2
TASAC	Permits and monitoring	High	High	2	2

3. COMMUNITY

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Crops farmers	Beneficiary	High	High	2	3
Agrodealers	Beneficiary	High	Medium	2	2
Processor of sunflower	Beneficiary	High	Medium	2	2
Aqua Farmers	Beneficiary	High	Medium	2	2
Seaweed farmers	Beneficiary	High	Medium	2	2
Artisanal Fishers	Beneficiary	High	Medium	2	3
Deep sea fishers and crew	Partners or Competitor	High	Low	3	3
Owners of Private Fishing Boats	Partners/Competitors	High	Low	3	3
Communities adjacent to AFDP interventions	Beneficiaries/Affected persons	Medium	Medium	3	3

4. INSTITUTIONS/RESEARCH PARTNERS

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
TARI	Implementing agency	High	High	1	1
ADC	Implementing agency	High	High	1	1
ASA	Implementing agency	High	High	1	1
TOSCI	Implementing agency	High	High	1	1
TAFIRI	May become Partner in implementation	High	Medium	3	2
Institute of Marine Sciences	May become Partner in implementation	High	Medium	3	2

5. DEVELOPMENT & INVESTMENT PARTNERS

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
AFD	May become co-financier	High	Low	3	2
JICA	May become co-financier	High	Low	3	2
TADB	May become co-financier	High	Low	3	2
World Bank	May collaborate in implementation	High	Low	3	2

6. INDUSTRY/ENTERPRISES

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
TAFICO	Implementing agency	High	High	1	1
ZAFICO	Implementing agency	High	High	1	1
Women's and Youth's cooperatives	Seaweed processing	High	High	1	2

7. MEDIA - all communication channels

Stakeholder	Who/what do they represent	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Relevant writers	Media of communicating messages to the public	Unknown	Unknown	3	3
Tanzania Standard Newspapers	Media of communicating messages to the public	Unknown	Unknown	3	3
The Guardian Ltd	Media of communicating messages to the public	Unknown	Unknown	3	3
Mwananchi Communications Ltd	Media of communicating messages to the public	Unknown	Unknown	3	3

Stakeholder	Who/what do they represent	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Radio stations	Media of communicating messages to the public	Unknown	Unknown	3	3
TV Stations	Media of communicating messages to the public	Unknown	Unknown	3	3
Independent Bloggers	Media of communicating messages to the public	Unknown	Unknown	3	3
Private Youtubers	Media of communicating messages to the public	Unknown	Unknown	3	3
Online TVs	Media of communicating messages to the public	Unknown	Unknown	3	3
				3	3

8. NGOs and CSOs

Stakeholder	Who/what do they represent	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Tanzania Nature Conservancy	May collaborate in implementation	High	Medium	3	2
WWF	May collaborate in implementation	High	Medium	3	2
IUCN	Provide data	High	Low	3	3
Beach Management Units	May collaborate in implementation	High	High	2	2

9. GOVERNANCE AND MANAGEMENT

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Programme Steering Committee	May collaborate in implementation	High	High	1	1
District Facilitation Teams	May collaborate in implementation	High	High	1	1

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3

10. OTHER STAKEHOLDERS

Stakeholder	Who/what do they represent?	Knowledge of Issues	Ability to Influence Outcome	Position on and stake in AFDP	Communication Strategy Level 1,2 or 3
Transporters	Logistics and support in the value Chain	unknown	unknown	3	3
Consumers	Target Market	unknown	unknown	3	3
Importers of similar products	Competitors	unknown	unknown	3	3

Annex 7: Study Team, Study Itinerary and ESMF Timelines

The study team is shown in the table below.

Table A7-1: ESMF Study Team

ESMF Study Team	
Ms Arundhati Inamdar Willetts *IFAD Consultant*	Team Leader, Environmental/SECAP Specialist
Mr Ojung Longdare *IFAD Consultant*	Environmental and Social Specialist

The field itinerary was as follows:

Table A7-2: ESMF Field Itinerary

Day	Activities
Monday 02/03/2020 to Friday 06/03/2020	- Preliminary meetings in Dodoma with PMO; VPO; MoA - Environment Unit; MLF – Environment Unit; NEMC; Ministry of Water and Irrigation -Director of Water Resources; MOFP - National Bureau of Statistics; FAO
Sunday, 31/05/2020	- Travelled from Dar es Salaam to Dodoma by road
Monday, 01/06/2020	- Planning meeting with GoT at PMO-Dodoma - Data and info collection
Tuesday, 02/06/2020	- Planning meeting with GoT at PMO-Dodoma - Data and info collection
Wednesday, 03/06/2020	- Met TARI Ilonga team at Msimba, Kilosa - Visited and observed existing boreholes and farms
Thursday, 04/06/2020	- Met ASA team at their field office, Morogoro Town - Met TOSCI team at their HQ/ office, Morogoro town - Met ADC Kingolwira team at their center and visited Boma road station-Morogoro Town - Held consultations with stakeholders(Aqua farmers, crop farmers, Agrodealers) at Morogoro)
Friday, 05/06/2020	- Travelled from Morogoro to Igunga, Tabora by road
Saturday, 18 July 06/06/2020	- Met ADC Mwamapuli center team - Visited water source and observed existing ponds - Held consultation with stakeholders(Aqua farmers, crop farmers, Agro dealers, Sunflower processor) at Igunga district
Sunday, 07/06/2020	- Travelled from Igunga to Chato by road
Monday, 08/06/2020	- Met ADC Rubabangwe team at Chato - Held Consultation with stakeholders(Aqua farmers and crop farmers) at Chato district-Geita - Travelled from Chato to Nzega
Tuesday, 09/06/2020	- Met Nzega District officials at their office - Held Consultation with farmers at Nzega

Day	Activities
	- Visited Kilimi dam and ASA farm - Travelled from Nzega to Dodoma by road
Wednesday, 10/06/2020	- Travelled from Dodoma to Bagamoyo
Thursday, 11/06/2020	- Met Bagamoyo District officials, - Held consultation with Fishers and BMU leaders - Travelled from Bagamoyo to Dar es Salaam
Friday, 12/06/2020	- Met TAFICO team - Held consultation with private fishing boat owners
Saturday, 13/06/2020	- Report writing at Dar es Salaam
Sunday, 14/06/2020	- Travelled to Zanzibar by boat
Monday, 15/06/2020	- Met Department of Fisheries officials - Held consultation with Fisher - Held Consultation with private fishing boat owners - Visited hatchery for fingerlings
Tuesday, 16/06/2020	- Visited ZAFICO Ice making plant - Visited ZAFICO fishing boat(long liner, 18m) docked at port
Wednesday, 17/06/2020	- Travelled from Zanzibar to Dar es Salaam by boat
Thursday, 18/06/2020	- Travelled from Dar es Salaam to Dodoma by road
Friday, 19/06/2020	- Report writing with GoT team at PMO-Dodoma - Zoom meeting with IFAD team
Saturday, 20/06/2020	- Report writing with GoT team at PMO-Dodom
Sunday, 21/06/2020	- Report writing with GoT team at PMO-Dodoma
Monday, 22/06/2020	- Report writing and discussions with GoT team at PMO-Dodoma - Met Permanent Secretary-Ministry of Livestock and Fisheries
Tuesday, 23/06/2020	- Report writing and discussions with GoT team at PMO-Dodoma
Wednesday, 24/06/2020	- Report writing and discussions on Aide memoire with GoT team at PMO-Dodoma - Zoom meetings
Thursday, 25/06/2020	- Report writing and discussions on Aide memoire with GoT team at PMO-Dodoma
Friday, 26/06/2020	- Travelled from Dodoma to Dar es Salaam by road

The ESMF study timelines were as follows:

Table A7-3: ESMF Study Timelines

Dates	ESMF Study Activity
02 – 06 March 2020	Preparation, document reviews, initial consultations
02 – 27 June 2020	Stakeholder consultations, site visits
25 July 2020	Submission of draft ESMF to IFAD for decision meeting
26 July to 31 July 2020	Review period and comments on ESMF
03 – 09 August 2020	Finalisation of ESMF
10 August 2020	Submission of Final ESMF to IFAD, MOLG and MAAIF