UNITED REPUBLIC OF TANZANIA

MINISTRY OF AGRICULTURE FOOD SECURITY AND COOPERATIVES

EXPANDING RICE PRODUCTION PROJECT (ERPP)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

JUNE 2014

EXECUTIVE SUMMARY

In 2012, the Government of Tanzania (GoT) submitted a proposal to the Global Agriculture and Food Security Program (GAFSP) to expand rice production in the country under a project named Expanding Rice Production Project (ERPP) or 'the Project'. The GAFSP Steering Committee accepted the proposal, and offered a prospective allocation of US$ 22.9 million for the Project.

The Project Development Objective (PDO) of ERPP is: *to increase rice produced and marketed in the Morogoro Region in the Tanzania Mainland and in Zanzibar, leading to improved rural incomes and food security.* The direct project beneficiaries are 30,600 smallholder farmers and their families in the selected irrigation schemes of Tanzania Mainland (25,000 households) and Zanzibar (5,600 households). Approximately, 50 percent of these farmers are women. Indirect beneficiaries include smallholder farmers not directly supported by the project, input suppliers, rice traders and processors and consumers.

The project has four main components: (i) Sustainable seed systems; (ii) Improving crop productivity through better irrigation and crop management; (iii) Innovative marketing strategies; and (iv) Project management, monitoring and evaluation.

Component 1: Sustainable Seed Systems: US$ 3.38 Million (2.27 Million for Tanzania Mainland and 1.11 Million for Zanzibar). The objective of this component is to enhance the adoption and sustained use of improved rice varieties that have been released by the research system. This will support on-farm demonstrations to introduce the new varieties to farmers, the multiplication and distribution of preferred varieties, and improvements in quality assurance for rice seed.

Component 2: Improving crop productivity through better irrigation and crop management: US$ 14.04 Million (10.34 Million for Tanzania Mainland and 3.7 Million for Zanzibar). This component aims to improve smallholder rice production and productivity through improved crop and water management. The project will support expansion and/or rehabilitation of selected irrigation schemes, and promote adoption of improved agronomic practices.

Component 3: Innovative marketing strategies US$ 2.37 Million for Tanzania Mainland. The main objective of this component is to increase the quantity of rice marketed by strengthening access to markets and improving price incentives at the farm gate. Activities under this component are targeted at only the mainland, because of the current absence of marketable surpluses, and hence limited marketing challenges, in Zanzibar. The project will improve market efficiency through two major activities: (i) provision of marketing infrastructure and (ii) strengthening of market linkages.

Component 4: Project Management and Coordination: US$ 3.1 Million (US$ 1.52 million for Tanzania Mainland and 1.6 million for Zanzibar. The objective of this component is to facilitate efficient implementation of project activities and tracking of results. Project implementation will use existing structures in Ministry of Agriculture Food Security and Cooperatives (MAFC) for mainland Tanzania and the Ministry of Agriculture and Natural Resources (MANR) in Zanzibar. Each of these Ministries will assign a dedicated task team of

key staff to ensure that there is adequate capacity to coordinate, implement and monitor the project effectively. Under this component, support will be provided for operational costs, project monitoring and evaluation and impact assessments. Due to capacity weaknesses in Zanzibar, the project will also fund supplementary technical assistance in procurement, financial management, and monitoring and evaluation.

The Project will be implemented in three districts (Kilombero, Kilosa, and Mvomero) of Morogoro Region in Tanzania Mainland and Pemba and Unguja Islands in Zanzibar. Both Morogoro Region and Zanzibar are home to a number of protected areas and critical ecosystems. Morogoro in particular is home to the Mikumi and Udzungwa National Parks, the RAMSAR site at Kilombero, and several essential Wildlife Management Areas (WMAs).

The two main sets of risks relate to the competitive demands for irrigation water, and to the possible environmental impacts of expanding use of agro-chemicals used in the irrigated farming systems. There is growing competition for limited water resources in the Morogoro region of mainland Tanzania. This Region encompasses or borders some of the uniquely diverse agro-ecologies in the world, including national parks, wildlife management areas and a Ramsar site. The expansion of irrigation investments potentially threatens the availability of water for wildlife and as well as for household use and hydroelectricity. The drying of rivers and wetlands reduces biodiversity. Multiple studies are evaluating water availability in the larger Rufiji River Basin, and the growing competition for water use. The River Basin Authority is being strengthened to better measure and manage this competition. On Zanzibar, the limited information available suggests the need to better manage what water resources are available. In either case, strong environmental assessments are required to assure the Project investments do not threaten degradation and to assure continuing protection of critical biodiversity.

The objective of the ESMF is to provide a framework for effective management of environmental and social issues in the proposed ERPP. It seeks to both enhance environmental and social development benefits of the Project in line with GoT and World Bank policies and guidelines on management of environmental and social development projects. Moreover, since the precise locations and potential impacts of future subprojects to be financed under ERPP are not yet known, and will not be identified prior to appraisal, the ESMF provides the basis for the preparation and approval of necessary environmental and social work, as needed for the subproject investments supported through the Project.

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ABBREVIATIONS

ASDS	Agricultural Sector Development Strategy
ASA	Agricultural Seed Agency
ASP	Agricultural Strategic Plan
ATI	Agricultural Transformation Initiative
BRN	Big Result Now
CAADP	Comprehensive Africa Agriculture Development Program
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoFMA	Community Forest Management Agreement
DADO	District Agricultural Development Officer
DAICO	District Agriculture Irrigation and Cooperative Officer
DEC	District Environmental Coordinator
DED	District Executive Director
DEMO	District Environmental Management Officer
DCCFF	Department of Commercial Crops, Fruits and Forestry
DoE	Department of Environment
DoI	Department of Irrigation
DITS	Department of Irrigation and Technical Services
DPPR	Director of Planning, Policy and Research
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMU	Environment Management Unit
ESIA	Environmental and Social Impact Assessment
ERPP	Expanding Rice Production Project
ESAF	Environmental and Social Appraisal Form
ESMF	Environmental and Social Management Framework
ESSF	Environmental and Social Screening Form
GAFSP	Global Agriculture and Food Security Program
GoT	Government of Tanzania
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
IO	Irrigator Organizations
IPMP	Integrated Pest Management Plan
JSC	Joint Steering Committee
KATRIN	Kilombero Agricultural Research and Training Institute
LGA	Local Government Authority
LGCDG	Local Government Capital Development Grant
MAFC	Ministry of Agriculture and Food Cooperatives
MANR	Ministry of Agriculture and Natural Resources
MoL	Ministry of Land
MTEF	Medium-Term Expenditure Framework
NAIVS	National Agricultural Input Voucher System
NEMC	National Environment Management Council
NEP	National Environmental Policy
NSGRP	National Strategy for Growth and Reduction of Poverty
PESIA	Preliminary Environmental and Social Impact Assessment
PDO	Project Development Objective

PMO-RALG	Prime Minister's Office - Regional Administration and Local Government
RGZ	Revolutionary Government of Zanzibar
RPF	Resettlement Policy Framework
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SC	Steering Committee
SESA	Strategic Environmental and Social Assessment
SMS	Subject Matter Specialist
SRI	System of Rice Intensification
SWAp	Sector Wide Approach
TAFSIP	Tanzania Agriculture and Food Security Investment Plan
TASAF	Tanzania Social Action Fund
TOSCI	Tanzania Official Seed Certification Institute
TRC	Technical Review Committee
TSC	Technical Steering Committee
URT	United Republic of Tanzania
UNFCCC	UN Framework Convention for Climate Change
VPO	Vice-President's Office
WMA	Wildlife Management Areas
ZARI	Zanzibar Agricultural Research Institute
ZITSU	Zonal Irrigation and Technical Support Units
ZSGRP	Zanzibar Strategy for Growth and Reduction of Poverty

1. INTRODUCTION

In 2012, the Government of Tanzania (GoT) submitted a proposal to the Global Agriculture and Food Security Program (GAFSP) to expand rice production in the country under a project named Expanding Rice Production Project (ERPP) or 'the Project'. The GAFSP Steering Committee accepted the proposal, and offered a prospective allocation of US$ 22.9 million for the Project. The Project will be implemented in three districts (Kilombero, Kilosa, and Mvomero) of Morogoro Region in Tanzania Mainland and Pemba and Unguja Islands in Zanzibar. Both Morogoro Region and Zanzibar are home to a number of protected areas and critical ecosystems. Morogoro in particular is home to the Mikumi and Udzungwa National Parks, the RAMSAR site at Kilombero, and several essential Wildlife Management Areas (WMAs). Given the ecological sensitivity of the project area, care must be taken to avoid negative impacts to the environment, surrounding communities and wildlife by minimizing over-clearing of natural vegetation, reduce impediments to wildlife movements, and balance water extraction with maintaining hydrological flow.

As part of project preparation, the World Bank Operational Policy 4.01 requires the Government of Tanzania (GoT) to prepare an Environmental and Social Management Framework (ESMF). This document sets out the mandatory principles, rules, guidelines and procedures to assess and manage the potential environmental and social impacts of the project. It also includes mitigation, monitoring and institutional measures to be taken during project implementation in order to eliminate, offset, or reduce adverse environmental and social impacts of project activities.

The objective of the ESMF is to provide a framework for effective management of environmental and social issues in the proposed ERPP. It seeks to both enhance environmental and social development benefits of the Project in line with GoT and World Bank policies and guidelines on management of environmental and social development projects. Moreover, since the precise locations and potential impacts of future subprojects to be financed under ERPP are not yet known, and will not be identified prior to appraisal, the ESMF provides the basis for the preparation and approval of necessary environmental and social work, as needed for the subproject investments supported through the Project.

An Integrated Pest Management Plan (IPMP) and a Resettlement Policy Framework (RPF) complement this ESMF. The IPMP include details on the integrated pest management strategies to be employed under the Project and addresses the need to monitor and mitigate negative environmental impacts of project activities by promoting biological and ecosystem based pest management. The RPF address the needs of those people who might be affected when Project investment causes the involuntary taking of land and other assets resulting in: (a) relocation or loss of shelter, (b) loss of assets or access to assets, (c) loss of income sources or means of livelihoods, whether or not the affected person must move to another location.

The GoT is further required to disclose this ESMF (as well as the IPMP and the RPF) so that they are accessible to the general public, local communities, potential project-affected groups, local NGO's and all other stakeholders in the country. This disclosure will also be made at the

World Bank Infoshop. The date for disclosure must precede the date for appraisal of the Project.

2. DESCRIPTION OF THE PROPOSED PROJECT

2.1 Project Background

The agricultural sector in Tanzania is a key driver of social and economic development in the country and will remain so in many years to come. The sector generates 26.8 per cent of the GDP, 24 percent of exports, employs over 75 per cent of the rural population where the majority of the poor reside. There is a strong interrelationship between its performance and the growth and employment generation of the industrial sector, and other key sectors. However, the sector is dominated by small scale subsistence farmers characterized by low productivity. The GoT is committed to bring about the transformation of agriculture from subsistence farming towards commercialization and modernization.

The national agricultural policy frameworks aims to create an enabling environment for improved productivity and profitability as the basis for poverty reduction through: (i) strengthening the institutional framework; (ii) creating a favorable climate for commercial activities; (iii) clarifying public and private sector roles in improving support services; (iv) developing input and output markets; and (v) mainstreaming planning for agricultural development in other sectors. In 2001, Tanzania formulated the Agricultural Sector Development Strategy (ASDS) for Tanzania Mainland and in 2004 the Agricultural Strategic Plan (ASP) for Zanzibar putting in place a sector wide approach (SWAp).

The two strategies aim to develop the agricultural sector by increasing the rate of annual agricultural sector growth to 6% in line with the Comprehensive Africa Agriculture Development Program (CAADP). Implementation of these strategies will contribute to the achievement of the National Strategy for Growth and Reduction of Poverty (NSGRP) and Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP) targets. In an effort to give more emphasis to a private sector-led development of agriculture, the two Governments, together with private sector players formulated the Kilimo Kwanza and the Agricultural Transformation Initiative (ATI), for Tanzania Mainland and Zanzibar respectively, as special campaigns to harness public support for the agricultural transformation agenda. On 11 November 2011, Tanzania launched the Tanzania Agriculture and Food Security Investment Plan (TAFSIP), which is a CAADP inspired framework aimed at mobilizing resources for the implementation of strategic agricultural interventions for both Tanzania Mainland and Zanzibar.

In order to address food and nutrition security in both Tanzania Mainland and Zanzibar efforts have been focused on increasing production and productivity of major food crops including maize, rice, cassava and sugar. This ERPP correspondingly seeks to expand rice production in Tanzania.

The Project Development Objective (PDO) of ERPP is: *to increase rice produced and marketed in the Morogoro Region in the Tanzania Mainland and in Zanzibar, leading to improved rural incomes and food security.* The direct project beneficiaries are 30,600 smallholder farmers and their families in the selected irrigation schemes of Tanzania Mainland (25,000 households) and Zanzibar (5,600 households). Approximately, 50 percent of these farmers are women. Indirect beneficiaries include smallholder farmers not directly supported by the project, input suppliers, rice traders and processors and consumers.

2.2 Proposed Project Components

The project has four main components: (i) Sustainable seed systems; (ii) Improving crop productivity through better irrigation and crop management; (iii) Innovative marketing strategies; and (iv) Project management, monitoring and evaluation.

Component 1: Sustainable Seed Systems: US$ 3.38 Million (2.27 Million for Tanzania Mainland and 1.11 Million for Zanzibar). The objective of this component is to enhance the adoption and sustained use of improved rice varieties that have been released by the research system. This will support on-farm demonstrations to introduce the new varieties to farmers, the multiplication and distribution of preferred varieties, and improvements in quality assurance for rice seed.

Subcomponent 1.1: Introducing new varieties to smallholder farmers. Tanzania has thirteen improved rice varieties released for multiplication and subsequent use by smallholder farmers. These are grown, however, on less than 15 percent of the total area cropped to rice. Most rice growers still plant low yielding varieties, and have yet to be introduced to the improved varieties. The project will support two years of on-farm demonstrations in the targeted regions of the Tanzania Mainland and Zanzibar in order to confirm the preferences of farmers for the new varieties. The demonstrations will be organized and monitored with support from national rice breeders to assure the information collected is integrated back into national breeding programs. The project will also fund field days, exchange visits and the broader dissemination of information about the new varieties to rice farmers in other regions. The project will fund goods and equipment, consultancy services, and operational costs.

Subcomponent 1.2: Promoting the sustainable production and delivery of preferred varieties. Seed multiplication and distribution systems will be strengthened for those improved rice varieties preferred by smallholder farmers. The project will: (i) strengthen the capacity of the Kilombero Agricultural Research and Training Institute (KATRIN) and the Zanzibar Agricultural Research Institute (ZARI) to produce the requisite quality and quantity of pre-basic seed; (ii) support the Agricultural Seed Agency (ASA) and the Seed Unit at Ministry of Agriculture and Natural Resources (MANR) in Zanzibar to produce adequate quantities of basic seed (from the pre-basic seed); (iii) support ASA and the MANR seed unit, for a limited period, to produce certified seed[1]; and (iv) provide incentives for the private seed companies to engage in production of certified seed[2]. The support to ASA and MANR for certified seed production will include the construction of irrigation infrastructure to support the expansion of rice seed production. Commercial seed companies will be encouraged to expand investment in wholesale and retail trade of rice seed as well as contract seed production. The project will fund goods and equipment, consultancy services, and operational costs.

Subcomponent 1.3: Strengthening seed quality control. The objective of this subcomponent is to ensure that rice seed available to farmers is of the right quality. The project will strengthen

[1] The objective is to support ASA and MANR (public agencies) to initially expand their production of certified seed of preferred varieties, but phase public production out as rice seed production by the private sector expands.

[2] Since rice is largely a self-pollinated crop, farmers can readily save seed from their previous year's harvest without short-term reductions in yield performance. This undermines commercial incentives to produce rice seed. Seed companies are seeking support to test the commercial viability of this market.

seed quality control systems to assure genetic purity, germination capacity, physical purity and freedom from diseases. Support will be provided for the rehabilitation and operation of seed laboratory infrastructure at ASA on the Tanzania Mainland and Kizimbani in Zanzibar, and for the purification of contaminated varieties (where contamination occurs). Support will also be provided to Tanzania Official Seed Certification Institute (TOSCI) to strengthen the inspection and testing of pre-basic and basic seed, and the certification of rice seed that is multiplied by ASA, MANR and private seed companies. The project will fund goods, consulting services and operational costs.

Component 2: Improving crop productivity through better irrigation and crop management: US$ 14.04 Million (10.34 Million for Tanzania Mainland and 3.7 Million for Zanzibar). This component aims to improve smallholder rice production and productivity through improved crop and water management. The project will support expansion and/or rehabilitation of selected irrigation schemes, and promote adoption of improved agronomic practices.

Subcomponent 2.1: Expansion and rehabilitation of irrigation infrastructure. This sub-component will improve water availability for dry season irrigation and water use efficiency of irrigation during both the wet and dry seasons. The project will expand and/or rehabilitate irrigation infrastructure at five irrigation schemes on the mainland, and eight irrigation schemes in Zanzibar. On the mainland, 325 ha of irrigated area will be rehabilitated and 315 ha will be expanded. In Zanzibar, 58 ha will be rehabilitated and 72.5 hectares will be expanded. The project will support the design of the irrigation infrastructure, the construction of the infrastructure, and the strengthening the Irrigator Organizations to assure sustainable operation and maintenance of the irrigation works. In complement, professional managers will be employed on the five mainland schemes to facilitate the implementation of the BRN strategy of rice scheme management. The project will finance goods, works, consulting services, operational costs, training, and professional management staff.

Sub-component 2.2: Promoting Adoption of Improved Agronomic Practices. The project will speed the adoption of improved technologies needed to raise rice productivity and production by smallholder farmers distributed across 40 irrigation schemes on the mainland (including the five to be rehabilitated or expanded) and 24 irrigation schemes in Zanzibar (including the 8 to be rehabilitated or expanded). The project will support: (i) farmer-led, on-farm demonstrations of two methods of the System of Rice Intensification (SRI) - one with manual weeding, and one with chemical weed control, (ii) training of extension staff, irrigation technicians and lead farmers, and (iii) a temporary, market-friendly subsidy scheme promoting the uptake of technologies on offer. The subsidy scheme includes an explicit graduation strategy modeled on the lessons obtained under the National Agricultural Input Voucher Scheme (NAIVS). The project will fund operational costs, goods and equipment and subsidy costs.

Component 3: Innovative marketing strategies US$ 2.37 Million for Tanzania Mainland. The main objective of this component is to increase the quantity of rice marketed by strengthening access to markets and improving price incentives at the farmgate. Activities under this component are targeted at only the mainland, because of the current absence of marketable surpluses, and hence limited marketing challenges, in Zanzibar. The project will

improve market efficiency through two major activities: (i) provision of marketing infrastructure and (ii) strengthening of market linkages.

Sub-Component 3.1: Provision of Marketing Infrastructure. The project will construct warehouses for each of five smallholder schemes where irrigation infrastructure will be rehabilitated, and rehabilitate feeder roads in two of these schemes to facilitate improved access to output markets[3]. The proposed warehouses, together with their respective capacities include: Njage (1,700Mt); Mvumi (1,300Mt); Msolwa (3,400Mt); Mbogo (1,000Mt) and Kigugu (1,000Mt). Feeder roads will be rehabilitated in two irrigation schemes: Njage (7km) and Mvumi (8km). The project will finance consultancy services, goods, works and related operational expenses for supervision.

Sub-Component 3.2: Strengthening Market Linkages and Market Information. This subcomponent aims to improve farmgate prices by testing alternative marketing strategies linked with the warehouse operations. These are expected to help farmers take advantage of the scale economies obtainable through bulk marketing, and the seasonality of rice prices. The project will fund studies to help farmers better understand rice markets. It will support the testing of multiple marketing strategies such as contract delivery with nearby processors, the auctioning of grain to groups of traders, warehouse receipts, and the strengthening of market information systems. The project will fund consultancy services, operational costs and technical assistance.

Component 4: Project Management and Coordination: US$ 3.1 Million (US$ 1.52 million for Tanzania Mainland and 1.6 million for Zanzibar. The objective of this component is to facilitate efficient implementation of project activities and tracking of results. Project implementation will use existing structures in Ministry of Agriculture Food Security and Cooperatives (MAFC) for mainland Tanzania and the Ministry of Agriculture and Natural Resources (MANR) in Zanzibar. Each of these Ministries will assign a dedicated task team of key staff to ensure that there is adequate capacity to coordinate, implement and monitor the project effectively. Under this component, support will be provided for operational costs, project monitoring and evaluation and impact assessments. Due to capacity weaknesses in Zanzibar, the project will also fund supplementary technical assistance in procurement, financial management, and monitoring and evaluation.

The list of sub-projects expected to be funded under the ERPP is provided in the below table.

Table 2.1: Sub-project to be funded under ERPP

Serial Number	Sub-Project Type	Location	Description	Comments
Morogoro Region				
MI1	Rehabilitation and extension of irrigation scheme	Njage, Kilombero District	Repair 1050 m canals Establish 5740 m canals with hydraulic structures	Converts 250 ha of informal irrigation to formal irrigation; need to gauge drainage to assure minimum flow
MI2	Rehabilitation and extension of irrigation scheme	Msolwa Ujamaa, Kilombero District	Establish 7650 m canals with hydraulic structures	Converts 625 ha informal irrigation to formal irrigation

[3] This will also improve the accessibility of farm inputs.

MI3	Rehabilitation and extension of irrigation scheme	Kigugu, Mvomero District	Establish 4400 m of canals with hydraulic structures	Converts 180 ha of informal irrigation to formal irrigation
MI4	Rehabilitation and extension of irrigation scheme	Mbogo, Mvomero District	To be defined in preliminary design study	Converts 120 ha informal irrigation to formal irrigation and add 80 ha of new irrigation area
MI6	Rehabilitation of irrigation scheme	Kilangali, Kilosa District	Repair 3335 m of canals	Reclaims 400 ha of irrigation area for public seed farm
MR1	Rehabilitation of road	Njage, Kilombero District	Repair 5540 m of road	Repairs road from village to scheme
MR2	Rehabilitation of road	Mvumi, Kilosa District	Repair 7000 m of road	Repairs road from village to scheme
MR3	Rehabilitation of road	Kigugu, Mvomero District	Repair 3200 m of road	Repairs road from village to scheme
MW1	Build warehouse	Njage, Kilombero District	1700 mt	Warehouse being established on village land
MW2	Build warehouse	Msolwa Ujamaa, Kilombero District	3400 mt	Warehouse being established on village land
MW3	Build warehouse	Kigugu, Mvomero District	1000 mt	Warehouse being established on village land
MW4	Build warehouse	Mbogo, Mvomero District	1000 mt	Warehouse being established on village land
MW5	Build warehouse	Mvumi, Kilosa District	1300 mt	Warehouse being established on village land
Zanzibar				
ZI1	Rehabilitation and extension of irrigation scheme	Mtwango, Unguja	Repair of 775 m of canals	78 ha more reliable irrigation; additional 60 ha has water for second crop
ZI2	Rehabilitation and extension of irrigation scheme	Koani	Establish 1600 m of canals	Allows 25 ha of irrigation in dry season
ZI3	Rehabilitation and extension of irrigation scheme	Banda Maji	Establish 1200 m canals	Allows 15 ha of irrigation in dry season
ZI4	Rehabilitation and extension of irrigation scheme	Mchangani	Establish 2250 canals	Converts 20 ha from informal to formal irrigation
ZI5	Rehabilitation and extension of irrigation scheme	Machigini, Pemba	Establish 2,500 m canals	Converts 12 ha of informal to formal irrigation
ZI6	Rehabilitation and extension of irrigation scheme	Dobi 1	Establish 100 m canals	Reduces leakage for 3 ha formal irrigation
ZI7	Rehabilitation and extension of irrigation scheme	Dobi2	To be determined	Converts 25 ha from informal to formal irrigation
ZI8	Rehabilitation and extension of irrigation scheme	Kwale Mpona	Establish 2000 m canals	Converts 15 ha informal to formal irrigation

ZI9	Rehabilitation and extension of irrigation scheme	Kibondo Mzungo	To be determined	Converts 25 ha from informal to formal irrigation
ZI10	Rehabilitation and extension of irrigation scheme	Ole	To be determined	Converts 15 ha from informal to formal irrigation on public seed farm

2.3 Project Implementation Arrangements

The project will be implemented through the Ministry of Agriculture and Food Cooperatives (MAFC) in the Tanzania Mainland, and the MANR in Zanzibar. In the Mainland, project implementation will be led by a coordination team seconded from within government although day to day responsibility for implementing the various components of the project will remain with the relevant departments of the Ministry. At the local level, project implementation will be guided by Local Government Authorities (LGA) working through the District Agricultural Offices. Implementation in Zanzibar will be similarly let by a designated coordinator, backed by an identified team of experts all seconded to the project by the Ministry. Ministry procurement, financial management and monitoring and evaluation systems will be used, with support from supplementary technical assistance as required. The project will be overseen by two technical steering committees, one for Mainland Tanzania and one for Zanzibar. These will be linked with a Joint Steering Committee encompassing the Permanent Secretaries of MAFC and PMO-RALG in Mainland, and MANR and President's Office (Regional Administration) for Zanzibar.

Overall policy guidance and coordination of ERPP will be vested in the Ministry of Agriculture, Food Security and Cooperatives in the Mainland. The office of the Director of Policy and Planning will coordinate day to day project activities.

Technical Steering Committees (TSC): Two technical project steering committees will be established to provide managerial oversight over the two implementation efforts. In order to avoid duplication of effort promote collaboration across related projects, the Technical Steering Committee for the Mainland project will report progress to the Steering Committee for the Agricultural Sector Development Programme (ASDP). For Zanzibar the Technical Steering Committee will be led by the Principal Secretary of MANR. Membership will include the Permanent Secretaries responsible for Cooperatives, Union Matters, Environment and Local Government. The main task of the two Steering Committees will be to review the progress of project implementation as laid out in the quarterly and annual progress reports, and approve the respective regional work plans and budgets. The task team leaders from the MAFC and the MANR will serve as the secretariat to their respective Steering Committees.

Joint Steering Committee (JSC): A subset of the members of each Steering Committee will meet together at least once a year as a Joint Steering Committee. This committee will compare the implementation progress in the two regions, review implementation lessons, and sign off on any significant reallocations of the project budget. These meetings will alternate in being hosted by the MAFC on the Mainland, and the MANR on Zanzibar. The Permanent Secretary of the host entity will chair each meeting.

3. BASELINE DATA

3.1 Morogoro Region in Mainland Tanzania

3.1.1 Geographical Location

Morogoro Region is one of the high potential agricultural regions in Tanzania Mainland that is located on the eastern side of the country. The Region lies between latitudes 5°58' and 10°00' South of the Equator and between longitudes 35°25' and 38°30' East of Greenwich. It is bordered by seven regions. In the north are Tanga and Manyara while in the eastern side are the Coast Region and Lindi regions. On the western there are Dodoma and Iringa Regions while Ruvuma is located in the southern side of the Region.

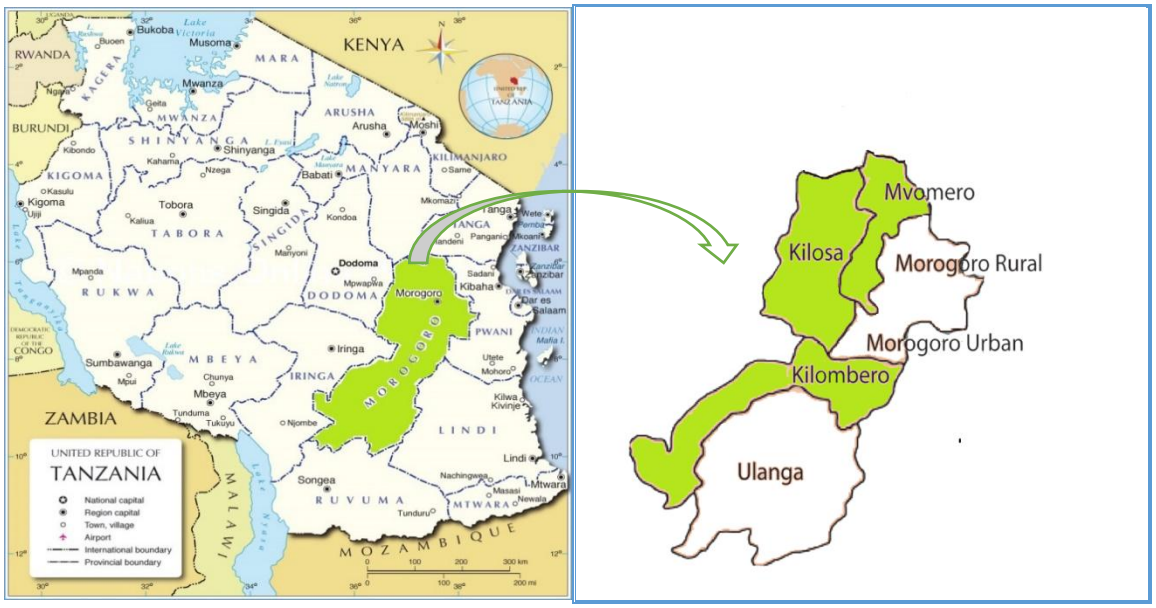

Figure 3.1: Tanzania Administrative Map (Left) – Districts of Morogoro Region (Right)

3.1.2 Land Area and Administrative Units

Morogoro Region has a total area of 73,039 km² out of which 2,240 km² is covered by water. This area makes it the second largest region in Tanzania (the largest is Tabora). The Region covers about 7.7 percent of the total area of Tanzania.

Table 3.1: Land and water surface area in the region by District/Councils, 2006.

District name	Land area KM²	Water area KM²	Total area
Kilosa	14,245.00	Insignificant	14,245.00
Kilombero	13,577.00	1,341.00	14,918.00
Ulanga	23,681.00	879.00	24,560.00
Morogoro Rural	11,711.00	20.00	11,731.00
Mvomero	7,325.00	Insignificant	11,711.00
Morogoro Urban	260.00	Insignificant	260.00
Total	**70,799.00**	**2,240.00**	**77,425.00**

Source: Morogoro Regional Commissioner's Office, 2006.

Table 3.1 indicates that most of the land of Morogoro Region is covered by land (96.9 percent) and water bodies cover only a small part of the Region (3.1 percent). Out of six district councils of the Region, only three districts of Kilombero, Ulanga and Morogoro Rural have significant water bodies.

Administratively, Morogoro Region is divided into six (6) districts, namely Kilosa, Kilombero, Ulanga, Mvomero, Morogoro Rural, and Morogoro Urban. The Districts are subdivided into divisions, wards villages and streets (for urban wards)/vitongoji (for rural wards). As indicated in Table 3.2, the Region has a total of 30 divisions, 141 wards, 540 villages, 275 streets and 3,204 vitongoji/hamlets.

Table 3.2: Distribution of Administrative Units by District in the Region, 2006

District Name	Divisions	Wards	Villages	Streets	Vitongoji/Harmlets
Kilosa	9	37	161	-	1,030
Kilombero	5	19	81	-	355
Ulanga	5	24	65	-	605
Mvomero	4	17	101	-	577
Morogoro (Urban)	1	19	Mitaa	275	-
Morogoro	6	25	132	-	657
Total	**30**	**141**	**540**	**275**	**3,204**

Source: Morogoro Regional Commissioners Office, 2006

3.1.3 Local communities

Most of the groups in the region are farmers. There are also pastoralists and agro-pastoralists. These groups have moved in and settled in the districts in search of grazing lands for their cattle. These new settlers have occasionally clashed with existing ethnic groups. The conflicts are always based over the land use and occupancy rights.

3.1.4 Climate and Soils

Morogoro Region experiences climate of moderate temperature and rainfall. The average annual temperatures vary between 18^0C to 30^0C in the lowlands. The Region experiences moderate temperature of around 25^0C almost throughout the year. The warm season normally runs from July to September.

Generally, the region experiences two major rainfall seasons: with long rains between November and May, and short rains between January and February. The average annual rainfall varies between 600mm and 1800mm. However, the average annual rainfall varies from year to year and between ecological zones. Moreover, the mountainous topographical nature of the Region affects the patterns of the rainfall. The eastern parts of Uluguru Mountains receive very high rainfall of up to 2,850mm annually while the leeward sides of these mountains are generally dry receiving rains of less than 600mm per annum. The areas experiencing the lowest rains include Gairo and Mamboya divisions in the North of Kilosa District, and Ngerengere division in Morogoro Rural District. Also, the Region's climate especially that of Ulanga and Kilombero Districts in the southern parts is greatly influenced

by the Mahenge and Udzungwa mountain ranges which have high altitude and harbour dense forest reserves.

Soils in the Region vary according to topographical and ecological zones. In the mountainous and hilly areas the common type of soils found are mainly oxisols which are generally low in nitrogen and phosphorus. Valley and low lands are generally characterized by alluvial soils which are fertile in nature. Sandy and clay soils are common in woodlands and grasslands

3.1.5 Topography

The topography of Morogoro Region is characterized by two remarkable natural features. First are the mountainous and hilly areas which include the Ukaguru Mountains, and the Uluguru and Nguru mountain ranges. Others include Mahenge and Udzungwa mountain ranges which extend to the Njombe Highlands in Iringa Region. These mountains form the eastern and southern part of the "Eastern Arc Mountains" which extend from southern Kenya to southern Tanzania. These mountains are part of an ancient crystalline block- faulted mountain range in the eastern part of Africa stretching from the Taita hills in Kenya to the Drankensberg in South Africa. The second feature that characterizes the Region's topography is the lowlands especially the Kilombero valley and the northern parts of the Region.

The Region's drainage is formed by many rivers that flow from highlands to lowlands in the valleys. The major rivers include the Kilombero, Ruaha, Wami, Luwegu, Ruvu, Ngerengere, Mkata, Mkondoa and Mkindo

3.1.6 Agro-Ecological Zones and Water Bodies

Morogoro Region can broadly be divided into four Agro-Ecological Zones, which include the mountain zone, the intermediate zone, and the Kilombero river valleys and basins.

i) The Mountain Zone

The mountainous agricultural zone receive the highest amount of rains with average annual precipitation ranging from 800mm-2500mm in the windward side of mountains and lowest rains in the leeward side at an annual average rains of less than 600mm. The zone has an altitude ranging from 600m to over 1250m above sea level. The zone experiences the coolest temperature in the Region with an annual average of 18^0C. The zone is densely populated in the eastern side due to its windward nature which brings high rainfall. On the other hand the western side is sparsely populated as it experiences dry climate due to its leeward location.

A variety of crops are grown in this zone. Food crops are mainly maize, Irish potatoes, banana, peas, yams, beans, groundnuts, wheat, cassava and horticultural crops. Major cash crops include coffee, oil seeds, vegetables and fruits such as pineapple and oranges. Due to its mountainous nature, the zone is limited to small stock such as goats, sheep and pigs.

The zone experiences a number of problems including deforestation which has culminated in serious soil erosion. Deforestation is caused by residents who excessively cut forests while clearing for farming. Roads and transport infrastructure are poor especially in the mountainous areas of the Region.

ii) The Intermediate Zone

This zone covers most of the southern parts of Morogoro District, and greater part of Kilosa District in Mikumi, Ulanga, Magubike, Magole and Chakwale wards. The altitude of this area ranges from 300m to 600m above sea level, with an average rainfall between 700mm and 1200mm per annum. The temperatures in this zone average 18^0C annually.

Crops grown for food in this zone include maize, millet, cassava, sorghum, paddy and legumes. Major cash crops raised include cotton, sisal and oilseeds. The zone is densely populated due to its suitability to agriculture and livestock keeping.

iii) The River Valleys and Basins

This zone is constituted by the Mgeta, Kafa, Ruvu, Wami, Msongozi, Mbulumi and Ngerengere river valleys in Morogoro and Mvomero District; the Wami-Mkata plains and Mkondoa valley in Kilosa District, and the Luhombero Plains in Ulanga District. The topography of these areas is predominantly plain with rainfall ranging between 900mm and 1400mm annually. Temperatures in this zone are high with an average of 30^0c due to its lowland nature. The zone is densely populated in the upper parts of the valleys, and sparsely populated in the inner parts of the valleys.

Major food crops grown in this zone include maize, paddy, sorghum, beans, cassava, fruits and vegetables. Cash crops are cotton, sisal, oil seeds, sugar cane and coconuts.

Livestock raised in this zone include cattle, sheep and goats in the areas with no tsetse fly problem. Roads, transport and communication infrastructure in this area face problems due to frequent flooding during the rainy season.

iv) Kilombero River Valley

The Kilombero River Valley encompasses 39,990 km2, about 23% of the total area, and contributes about 65% of the flow to the Rufiji River. An important feature of the Kilombero basin is the great fertile Kilombero valley below the eastern scarp of the Udzungwa Mountains. Numerous rivers flow on the scarp from the Udzungwa plateau. Some of the important rivers are the Ruhudji, Kihansi, Luhombero, Kigogo-Ruaha and Mpanga. The Ruhudji and the Luhombero form the Kilombero River. After Shughuri rapids on the old basement step, the Kilombero joins the Luwegu flowing from south east to form the Rufiji.

The Rufiji basin is large, with differing rainfall and catchment characteristics. The area north of Poroto and Udzungwa Mountain is under semi-arid conditions with mean annual rainfall of 500 mm. Rainfall increases southward and larger falls of 1800 mm per year are observed on the slopes at the Udzungwa and Kipengere range. The rainfall pattern is such that there is one rainy season (mid-November to May) and one dry season. This pattern is the same all over the basin with the exception of coastal areas where there is slight tendency to bimodal rain pattern. There is a tendency for the dry season to set earlier in the Great Ruaha basin than the Kilombero basin. The Kilombero floods occur at the end of April or the beginning of May. Runoff pattern is closely related to the rainfall pattern. Rivers start rising in December with a peak in March-April. The unique ecological endowment, crop and livestock systems in each zone are summarized in the table below.

Table 3.3: Economic activities within Morogoro region.

Zone	Area covered	Crops	Livestock raised
Higlands 600	Nguru, Mahenge, Rubeho, Udzungwa and the Ubena mountains	Maize, Vegetables, Fruits, Coffee, Cocoa, Citrus	Poultry, Pigs, Goats, Sheep
Plateau 300-600m	Major part of Kilosa District and part of the middle of Morogoro South	Maize, sorghum, sweet potatoes, cotton, sunflower, simsim, citrus, paddy, cassava and banana	Cattle, sheep, chicken
Lowland and River valleys	Kilombero Wami, Mkindo, Ngerengere, Mgeta, Luwegu and Luhomberovalleys	Paddy, maize, sugarcane, bananas, cocoyams, cassava and sweet potatoes.	Mainly poultry

Source: Morogoro Regional Office, 2006.

3.1.7 Regional Economy

3.1.7.1 Introduction.

Morogoro Region is one of the Regions in Tanzania with great potential of economic development and prosperity. The Region has a very good climate and land favorable for agriculture and other economic investments. The Region contains Morogoro Urban centre which is its headquarters. The urban centre is strategically located at the junction point of major roads from Dodoma and Iringa to Dar es Salaam and Arusha. The economy of the Region is dominated by agriculture and the allied activities. The major activities include:

(i) Small Scale farming (food and cash crops production)
(ii) Cattle keeping (mainly indigenous livestock)
(iii) Plantations and estates (sisal, sugar).
(iv) Small capital intensive urban sector whose main activities include:
- Manufacturing and
- Provision of services - offices, hotels, petty trading etc.

(v) Traditional fishing is practiced along the Kilombero and Wami rivers as well as Mindu dam.
(vi) Some mining is carried out at Lukande village in Ulanga District and at Matombo in Morogoro rural district. The region is rich in three types of minerals, gemstones; construction minerals (such as sand, gravel and stones) and industrial minerals (including reticule lime stone, mica and graphite).

Agriculture is the major economic activity in the Region. It engages about 80 to 90 percent of the region's labor force.

Agriculture involves both small and large-scale farmers. Large-scale farms include the Kilombero and Mtibwa sugar estates, sisal estates, and paddy farms in Dakawa in Morogoro Rural District, Mngeta in Kilombero District and Kilangali in Kilosa District.

Maize and paddy are the major staple food crops. Other food crops in the region include sorghum, sweet potatoes, beans, cassava, millet, groundnuts, tomatoes, fruits and vegetables. The main cash crops in the Region are cotton, coffee, sisal, onions, oil seeds (such as sesame, sunflower and some cocoa along the mountain slopes.

3.1.7.2 Irrigation potential

Table 3.4 shows the potential irrigation areas in Morogoro Region. There is a potential for irrigation of 434,390 hectares. Only 274,243 hectares was under irrigation by the year 2008/2009. Roughly 60 percent of the potential area for irrigation is yet to be utilized.

Table 3.4: Potential Areas for Irrigation in Morogoro Region, 2006

	RIVER BASIN	POTENTIAL AREA (HA) FOR IRRIGATION
I	**Kilombero river basin**	
	1. Luri, Mchilipa and Lwasesa plains	17,960
	2. Lufupa and Sofi plains	36,740
	3. Ruhuji, Mnyera and Mpanga plain	134,700
	4. Kihansi, Mugeta, Ruipa and Lumemo plain	146,940
	Sub total	**336,340**
II	**Luwengu river basin**	
	1. Luhombero and Luwengu plain	16,500
	2. Ruaha and Chilombola plain	10,450
	Sub total	**26,950**
III	**Wami river basin**	
	1. Wami – Dakawa plain	10,500
	2. Mkindo and Mgongola plain	15,600
	Sub total	**26,100**
IV	**Great Ruaha river basin**	
	1. Kibegere plain	15,000
	2. Kidatu and Msolwa plain	30,000
	Sub total	**45,000**
	GRAND TOTAL	**434,390**

Source: Morogoro Regional Commissioners Office, 2006

Kilombero with irrigation schemes covering 17,606 hectares is the district with the largest irrigated area in the Region. Morogoro District having three irrigation schemes has a total of 2,140 hectares which are developed and used. The crops which are mainly serviced by these irrigation schemes are sugar cane, paddy, maize, vegetables and pulses.

3.1.7.3 Livestock Production and population

Data collected in 2006 across Morogoro Region shows that chicken occupy the largest proportion (55.5 %) of all livestock kept, followed by cattle (22.6 %), goats (18.6 %), sheep (2.9 %), pigs (0.9 %) and donkeys (0.1 %) (See Table 3.5 below).

Table 3.5: Estimated Livestock population in Morogoro Region by District, 2006

District Name	Cattle	Goats	Sheep	Donkey	Pigs	Chicken	Total/ district	%
Kilosa	215,040	93,737	25,098	2,930	5,097	500,612	842,514	32.1
Kilombero	68,106	10,090	5,806	157	6,902	365,670	455,446	17.4
Ulanga	97,263	16,714	18,084	262	495	346,219	479,037	18.3

Movemoro	172,827	51,161	20,121	385	6,243	192,325	383,584	16.9
Morogoro Urban	4,170	4,300	180	3	3,130	25,640	37,423	1.4
Morogoro	35,935	295,404	5,467	55	2,543	25,804	364,908	13.9
Region Total	**593,341**	**441,406**	**74,756**	**3,792**	**24,410**	**1,456,270**	**2,562,912**	
% livestock type	22.6	18.0	2.9	0.1	0.9	55.5		100

Source: Morogoro Regional Commissioners Office, 2006

Kilosa District has been found to contains the largest share of livestock kept (32.1 %), followed by Ulanga (18.3 %), Kilombero (17.4 %), Mvomero (16.9 %), Morogoro (13.9 %) and Morogoro Urban (1.4 %). Most cattle are indigenous beef followed by dairy cattle, and lastly improved beef cattle. There is an average of 2 dairy cattle kept by each dairy cattle keeper.

Although dairy cattle are fewer than indigenous cattle in Morogoro, there has been a considerable increase in dairy cross cattle in the region since 1990. One of the factors limiting livestock keeping is the limited grazing land due to villagers allocating land for other uses and un-demarcated land for crop and livestock production in the region.

3.1.7.4 Natural Resources

The natural resources sector in Morogoro Region is comprised of various sub-sectors including forestry, fisheries, bee-keeping and wildlife. The sector is vital for the social and economic development of the Region and the nation in general. According to the 2012 Population and Housing Census, the sector employs a total of 29,753 people which is about 3.4 percent of the Region's labor force. Over the period of 2005-2010, the sector contributed around 7 percent to the country's Gross Domestic Product (GDP) on average.

The sector also plays an important role in the maintenance of climate stability, protection of water sources, and soil fertility; controlling land erosion; and providing a source of wood fuel, industrial raw materials and hydro-electric power. The Region is very rich in natural resources which include perennial streams, springs and rivers such as the great Ruaha; wildlife areas such as Selous Game Reserve, the Mikumi National Park, Kilombero Nature Reserve, the Ramsar site and Udzungwa Mountains National Park.

3.1.7.5 Forestry

The 1974 survey on the extent of forest cover in the Region of Morogoro indicated that forests covered about 88 percent of the Region's total area. The area covered by forests was estimated at 64,000km2. However, since that period tremendous changes have taken place in terms of population and economic activities that have significantly contributed to the depletion of this valuable resource. In particular, the Region's forest cover has been under serious pressure from agricultural and livestock activities as well as excessive tree cutting for fuel wood and other domestic uses. The government and community responses to these destructive forces include tree planting and forest conservation initiatives, and the demarcations of more land as forest reserve.

Most of the forest reserves in the Region are found in four districts, namely Kilombero, Kilosa, Ulanga and Morogoro Rural. Most of the reserves cover mountainous areas under a high rainfall and so are the important catchments. The main mountain ranges include the Uluguru and Nguru in Morogoro and Mvomero Districts, Udzungwa in Kilombero District, Mahenge in Ulanga District and Ukaguru and Rubeho in Kilosa District. Table 3.6 shows the number, and size of forest reserves in the districts of the Morogoro Region.

Table 3.6: Forest Reserves by District in Morogoro Region, 2006

District Name	No. Reserved Forests	Total Area (Ha)	Encroached Area (Ha)
Kilombero	13	127,364	2,547
Ulanga	8	7,692	1,430
Mvomero	20	80,662	3,496
Morogoro	17	112,444	Not available
Morogoro (Urban)	3	14,255	-
Total	**61**	**342,417**	**7,473**

Source: Morogoro Regional Commissioners Office, 2006

3.1.7.6 Environmental Conservation

Morogoro Region is one of the Regions in Tanzania, which has succeeded in environmental conservation. The Region has undertaken remarkable efforts in addressing environmental degradation through afforestation. In these efforts the Region has been involving various stakeholders in planting trees in order to offset deforestation which has occurred in the past.

Stakeholders involved include the Government Forest Division, villages, primary schools, NGOs, individuals and other institutions such as prisons and army camps. Normally seedlings are raised and distributed to schools, villages, institutions and individuals for transplanting. Up to the year 2005 there were over 20 NGOs involved in environmental conservation activities. The activities include tree seedlings production, water catchments conservation schemes, bee keeping, and wildlife conservation.

3.1.7.7 Bee-Keeping

Bee-keeping is a well suited economic activity in the Region due to its extensive forest cover and well-watered lands. However, this important activity is handicapped by low technical know-how in modern bee-keeping techniques. As such the potentials in this sub-sector have not been adequately exploited.

Table 3.7 shows the number of traditional and modern beehives in the Region. It shows that Kilosa District is leading in terms of traditional and modern beehives in the Region. The District is followed by Kilombero, Ulanga, and Morogoro Districts in this aspect. All districts have relatively fewer modern beehives as compared to traditional beehives. Morogoro Urban District has no traditional beehives and has fewer modern beehives. Its low performance in this sub-sector is attributed to lack of adequate forest resources because of its urban nature.

Table 3.7: Number of traditional and modern beehives by district in the region 2006.

District Name	Traditional Beehives	Modern Beehives	Total
Kilosa	19,189	705	19,894
Kilombero	3,500	350	3,850

Ulanga	2,242	282	2,524
Mvomero	880	10	890
Morogoro	2,212	571	2,783
Morogoro (Urban)	-	45	45
Total	**28,023**	**1,963**	**29,986**

Source: Morogoro Regional Commissioners Office, 2006

Table 3.8 shows the estimated production of bee products by district in the Region by the year 2005. As shown in the Table, Kilosa had been the major producer of bee products producing 82.6 % and 63.3 % of the Region's bee wax and honey. Following Kilosa in bee products production are Kilombero and Ulanga, respectively. However, in terms of beeswax production Ulanga is not featuring well as it produced only 400 Kgs in 2006.

Table 3.8: Estimated Production Levels of Bee-Products by District in the Region 2005/06

District Name	Bee-wax (Kgs)	District % to total	Honey (Kgs)	District % to total %
Kilombero	29,919.0	82.6	199,460.0	63.3
Ulanga	2,775.0	7.6	41,625.0	13.3
Mvomero	400.0	1.1	18,026.0	5.8
Morogoro(Rural)	387.0	1.1	1,204.0	0.1
Morogoro (Urban)	2,746.0	7.5	54,910.0	17.4
Total	13.0	0.1	460.0	0.1
	36,240.0	**100.0**	**315,685.0**	**100.0**

Source: Morogoro Regional Commissioners Office, 2006

3.1.7.8 Fisheries

Fishing activities in the Region are mainly carried out in rivers as it has no large water bodies such as lakes or ocean. The rivers on which fishing activities are carried out originate from within and outside the Region. Mountain ranges that are found in the Region are the sources of these rivers. The rivers include Kilombero, Ruaha, Kihanzi Luwegu, Ruvu, Wami, Ngerengere, Mkondoa and Mkindo. Fishing in the Region is also carried out on man-made dams which are mainly found in Kilosa, Kilombero and Morogoro Rural District. In Morogoro Urban District there is one man-made dam, the Mindu, which gets its water from Ngerengere River. The size of the dam is 320 hectares.

Fishing is particularly important in the Ulanga District. The district enjoys the presence of abundant natural fisheries resources. These include rivers such as Kilombero, Ruaha, Mwatisi, Mnyera, Ruhoji, Luhombero, Furua, Fuli, Lukanda, Luwegu, Mafinji, Pitu, Isaka, Mselesi, Mtipa, Mbalu and many other tributaries. The resources also include 40 natural dams and man-made small dams which have been locally made by the community purposely for fishing activity.

Caritas-Mahenge is the NGO currently operating in Ulanga District. Together with other activities in the District, it has a fishing project which provides training on effective fish farming. The project also provides improved fish fingerlings free of charge to the participating members of the villages in which it is operating. The villages in which the NGO is operating include Makanga, Mdindo, Msogezi, Ruaha and Isongo.

Fishing is also an established economic activity in Morogoro and Mvomero Districts. The rivers used for this purpose in these districts include Wami, Mgeta and Divue. The districts have a total of 249 man-made and natural dams.

3.1.7.9 Wildlife and Tourism

Wildlife conservation, protected area management and game hunting have long been well established in Tanzania, dating back to German hunting laws in 1901-1920. The "Protected Area Network" now covers about 28 percent of the country (19 percent is high protection where farming and residence are not allowed). In Tanzania the responsibility for managing wildlife and protected areas is split between National and Local/District Governments, and then between Government Ministries and Parastatals, such as Tanzania National Parks Authority (TANAPA).

Morogoro has two famous National Parks in the country, namely Mikumi and Udzungwa. Also, part of famous the Selous Game Reserve (the largest game reserve in Africa) is in this region. Due to its unique ecological importance, this Game reserve was designated by UNESCO as a United Nations World Heritage Site in 1981. It covers a wide variety of wildlife habitats, and a variety of animals including elephants, buffalos, wild-dogs and hippos. Other animals of tourist status include the lion, bush buck, impala, giraffe, baboon and zebra.

Mikumi National Park is located in the North of the Selous Game Reserve and shares borders with the Uluguru Mountains in the north and Rubeho Mountains in the south-east. The park which was gazetted in 1964, shares the eco-system with Selous Game Reserve and Kilombero Game Controlled Area. With 3,230 km2 coverage, the park is famous for its large population of elephants, giraffes, buffalos, zebra, elands, greater kudu, and wildebeest, roan and sable antelope. Predators include the tree climbing lion, leopard, wild hunting dogs and black-backed jackals. The park has more than 400 species of birds which include Shelley's double colored sun bird, pale billed hornbill and violet-crested Turaco as well as violet-backed starling. The surrounding mountains and hills bring compelling natural beauty making them highly attractive to wildlife tourists.

The region includes ppen grasslands, acacia and miombo woodlands and riverine forests. The Udzungwa Mountains National Park, which covers about 2000 km², was the first terrestrial national park declared in Tanzania. The mountains which are covered with dense forest, rise abruptly from the Kilombero plain area in Morogoro Region and then extend towards Iringa Region. It is famous for its biologically diverse forest with about 20 to 30 plant species that are not found elsewhere in the world. Among the factors that contribute to the richness of this park is high altitude which ranges between 200 to 2600 metres above sea level. This helps the condensation of moist winds from the Indian Ocean, which then forms rains. The characteristic climate has made it to be the source of water catchment for the tributaries of river Kilombero, which joins Ruaha to form Rufiji River in the Coast Region.

A variety of animal species can be found in the Udzungwa Mountains National Park. These include water buffalo, elephants, leopards and a number of reptiles, such as chameleons and snakes. Other animals include rare primates such as red colobus, Sanje crested mangabey, monkeys, black and yellow baboon, which live in the slopes of the mountains all sharing the same habitat. The Park is also one of the top ten forests for bird conservation in Africa. Recent discoveries of animal species in the Park include a single skins Lowe's servaline

genet, the highland Mangabey which is a long tailed medium-sized primate with tree-dwelling life style. Another famous discovery is the three toed frog which gives live-births instead of eggs. This type of frog-species is not found elsewhere in the world.

3.1.7.10 Industrial Development

At present there are very few meaningful industrial activities in Morogoro Region. The industrial development in the Region still needs more effort since the region is endowed with a wide range of natural resources that could lead to the establishment of resource based industries. Such resources offering potential for industrial development include various types of cash and food crops, minerals, and forest and bee products. The Region also produces a variety of fruits suitable for industrial processing including pineapples and oranges. Table 3.9 shows the existing industries in the Region. Most of the industries which were once owned and run by Government have been privatized.

Table 3.9: Status of Industries in Morogoro Region as per 2006

Name of Industry	District	Name after privatization
Kilombero Sugar Company	Kilosa	K2-ILLOVO
Kimamba Fibres	Kilosa	
New Msowero Farm	Kilosa	
Kilosa Coop. Union	Kilosa	
Mikumi Poa Rice Mill	Kilosa	
SUMAGRO Sisal Industry	Kilosa	
Mangula Furniture	Kilombero	
Kidatu HP	Kilombero	
Kihansi HP	Kilombero	
Kilombero Sugar Company	Kilombero	K1-ILLOVO
Morogoro Canvas Mills	Morogoro (Urban)	Morogoro Canvas Mills
Tanzania Tobacco Factory	Morogoro (Urban)	Tanzania Tobacco Processors Co. Ltd.
Moproco Ltd	Morogoro (Urban)	Abood Seed Oil Industry Ltd.
Morogoro Packaging Industry	Morogoro (Urban)	Tanzania Packaging Manufacturers (1998) Ltd
Abood Soap Industry	Morogoro (Urban)	-
Karakana ya Reli (TRC)	Morogoro (Urban)	TRL Workshop
Mrogoro Tanneries Ltd		Tanzania Leather Industries Ltd.
Morogoro Polyster Textile Mills	Morogoro (Urban)	21st Century Textile Mills Ltd.
Morogoro Ceramic and Wares Ltd.	Morogoro (Urban)	Purebod UK
Mtibwa Sugar Estates	Morogoro (Urban)	Mtibwa Sugar Estates Ltd.

Source: Morogoro Regional Commissioners Office, 2006

3.1.7.11 Road Network Development

Because of the location of Morogoro Region there is an elaborate connection of road networks. This position makes the Region a centre for the national roads network - to Dar es Salaam and the ocean coast in the East, Dodoma in the West and Iringa in the South. All the roads connecting all these regions are tarmac roads. The region is also served by inter-district links by regional roads, district roads and feeder roads. The roads are important as they link different parts of the region, and facilitate transportation of produce to the market.

Table 3.10 shows the distribution of road networks by type in various districts of the Region.

Table 3.10: Road Distribution in Morogoro Region by 2006.

District Name	Type (Km)				
	Truck	**Regional**	**District**	**Feeder**	**Total**
Kilosa	290.00	129.00	446.00	470.00	1,335.00
Kilombero	75.00	210.00	88.70	141.40	515.10
Ulanga	70.00	152.00	453.10	113.50	788.60
Mvomero	112.00	232.89	80.90	214.90	640.69
Morogoro	31.50	144.00	348.00	262.00	785.50
Morogoro (Urban)					376.00
Total	**578.50**	**867.89**	**1,146.70**	**12,201.80**	**4,440.89**

Source: Morogoro Regional Commissioners Office, 2006

3.1.8 The Sociopolitical Environment of Morogoro Region

3.1.8.1 The Demographics

Tanzania's population of 44.9 million in the 2012 census is made up of more than 120 different tribes, most of them belonging to the Bantu family. Population density has increased from the national average of 39 people in 2002 to 51 people per sq. km. in 2012. Also at regional level, population density varies between regions, from 13 people per square kilometer for Lindi region to 3,133 people per sq. km. for Dar es Salaam region on the part of Tanzania Mainland. In Tanzania Zanzibar, regional population density ranges from 135 people per sq. km. in Unguja South to 2,581 people per sq. km. in Urban West.

According to the 2012 Population and Housing census, Morogoro Region had a total population of 2,218,492 people, 1,093,302 being male and 1,125,190 females with an average household size of 4.4. The average population growth rate is 2.6 percent per annum. According to United Republic of Tanzania-URT, 2012), the Regional intercensal population growth rates between 1967-1978, 1978 -1988, 1988-2002 and 2002-2012 were 2.9%, 2.6%, 2.6% and 2.4% respectively. Across the districts of Morogoro Region, the population growth rate over the period ranged from 1.1 to 4.7 percent.

The health status in Tanzania is poor. Life expectancy at birth is 44years (a decline due to HIV and AIDS) compared to 50 years average in Sub Sahara Africa (SSA), and infant mortality of 99 per 1000 live births compared to 92 for SSA. The incidence of HIV/AIDS is high, with 10.9% of the urban population and 5.3% of the rural population aged between 15 and 49, zero-positive. In the 1990's the HIV infection rate increased significantly among this group and was higher among women. Infection rates are four times higher among young girls compared to boys. Water and sanitation services are deficient. Only 49 percent of the population has access to improved water sources. Communicable diseases (HIV/AIDS, persistent malaria and diarrhea), malnutrition and poor quality health care have been major factors in poor survival indicators.

The illiteracy rate (% of population age 15+) is 25%. The Gross primary enrollment (% of school-age population) is 67% for men and 66% for women.

3.1.8.2 Characteristics of Poverty

Based on the results of the in-country consultations with local communities, local and central governments and civil society members, during the preparation of this ESMF, the following characteristics of poverty were derived:

Who are the Poor?

- Rural households.
- Female headed households, other households with less than two adult-members, elderly and handicapped persons.
- Large households.

The groups are not mutually exclusive.

Why are they poor?

- **Rural Households**

- low agricultural productivity, declining soil fertility and environmental degradation.
- lack of access to land, land fragmentation, insecurity of land tenure.
- lack of access to markets, absence of rural commercial activity and alternative income earning opportunities.
- poor quality education, lack of access to education, high cost of education.
- poor health services and health standards and rise in HIV/AIDS incidence, impacting negatively on productivity.
- Poor nutritional intake
- lack of access to low cost capital or micro-credit or micro-grants.
- lack of access to affordable and sustainable household energy sources.
- Vulnerability

- **Female-headed households**

- shortage of household labor.
- declining soil fertility
- many women have to take care of unemployed/unemployable husbands, dependent parents, dependent orphans,
- low education attainment, poor access to land, paid employment and credit
- poor social services, e.g. water, health, education etc.

3.2 Zanzibar Islands

3.2.1 Geographical Location

Zanzibar consists of two main islands, Unguja and Pemba, and several other smaller islands some of which are uninhabited. Zanzibar is located in the Western Indian Ocean, about 30 kilometres off the East Coast of Africa between latitudes 5 and 7 degrees south of the Equator. The Isles has a total area of 2,654 square kilometres; out of this, Unguja, which is the largest, has an area of 1,666 square kilometres while Pemba has an area of 988 square kilometres. with a population density of 370 persons per sq km, making it the most densely populated area in East Africa. The 1988 and 2002 inter-census annual population growth is at 3.1 percent.

Figure 3.2: Map of Zanzibar

3.2.2 Administrative Units

Zanzibar is part of the United Republic of Tanzania and consists of the two main islands, Unguja and Pemba and a number of small islets. Administratively, Zanzibar is divided into five regions, three of which are in Unguja (North, South and Urban West). The remaining two regions are Pemba, namely North and South Regions. In each region there are two districts. Overall, there are 331 Shehias in Zanzibar. Based on the 2012 National Census, is estimated to have a population of 1.3 million with a population density of 370 people per km2. Zanzibar has five regions and ten districts. Unguja Island, has three regions (Urban West, North and South) with six districts. Pemba Island has two regions (North and South) with four districts as indicated in demographic below.

Table 3.11: Population Distribution by Districts and number of Sheia, Zanzibar

Districts	Population	Number of Shehia
North "A"	105,780	36
North "B"	81,127	29
Central	76,346	40
South	39,242	21
West	370,645	39
Urban	223,033	45
Total Unguja	**896,173**	**210**
Wete	107,916	32
Micheweni	103,816	27
Chake Chale	97,249	29
Mkoani	97,867	33
Total Pemba	**406,848**	**121**
Total Zanzibar	**1,303,021**	**331**

Source: National Census (2012)

3.2.3 Climate

Zanzibar experiences a lowland tropical humid type of climate with a bimodal pattern of rainfall influenced by the prevailing monsoon trade winds. There are two main rain seasons i.e. Masika which occur between March and June; and Vuli rain which starting from October to December. Rainfall through Zanzibar varies within the range of 1000 to 2500 mm/yr. Mean annual rainfall for Unguja is 1700 mm, whilst that for Pemba is 1800 mm. The mean maximum temperature is 32^0C and 27^0C.

3.2.4 Land-use and Agro-ecological Zones

Zanzibar comprises of two major agro-ecological zones namely the plantation zone and the coral rag zone. These zones have different characteristics in terms of soils, resources and social economic patterns. The pattern of land-use in Zanzibar generally follows the distribution of the different soil classes; the permanent, settled agricultural activities are concentrated on the deep and fertile soils areas with good moisture content, while the coral rag area is characterized by shallow and stony soils with moisture stresses. It is popular for root and other drought tolerant or seasonal crops, and activities such as production of charcoal and firewood, shifting cultivation and grazing.

The Woody Biomass Survey of 2013 indicates that 36 percent of land in Unguja Island is used for agricultural production whilst the corresponding area for Pemba is 58 percent. This is slightly lower than the one reported by the National Coconut Development Program in 1982. The Woody Biomass Survey of 2013 indicates that, native forest in Zanzibar covers 86,182ha; mangrove forest occupies 16,488ha; while forest plantations cover 3,788ha. The Zanzibar Cash Crops Farming System Project (ZCCFSP, 1995) has divided the land area into ten farming system zones. Five of these zones are in Unguja and the other fives are in Pemba. These zones were identified taking into consideration agro-ecological characteristics, soils and socio-economic characteristics of the islands.

3.2.5 Topography and Soils

Topographically, Zanzibar is relatively flat with some hilly areas particularly in the western part of Pemba. The soils in Zanzibar can be categorized as *deep* and *coral rag* soils. The deep and fertile soils occur in the western part of Islands where most of permanent agriculture is practiced. These soils occupy about 45% (74,000 ha) of Unguja, whereas on Pemba they occupy 85% (94,633 ha) of the total land area. The coral rag soils occupy the eastern side of the Islands and are characterized by a thin layer of soil pockets in coral outcrops. Coral rag accounts for 55% (90,458 ha) and occupy 15% (14,195 ha) of the total land area of Unguja and Pemba, respectively. Due to the scarcity of land, most of the forestry activities are carried out in the coral rag areas while most of the agricultural activities are being carried out in deep soils. However, there has been new developments where agriculture and settlements expand to coral rag areas as reported by the Zanzibar Wood Biomass Survey of 2013.

3.2.6 Ethnicity

Zanzibar is composed of cosmopolitan society with rich mixture of African, Arabs and Hindus. Islam is the dominant religion practiced by over 90%. The Zanzibar has not experience any clashes associated with land use and occupancy rights.

3.2.7 Overview of Agriculture Sector in Zanzibar

Agriculture is the second most important sectors in the economy and was identified as one of the main drivers of growth. Agricultural contributes to 30.2% to the GDP (in 2012) with annual growth of about 1.3%. The service sector is the biggest contributors to the GDP. Currently this sector account to about 45.3% to the GDP with annual growth rate of 8.7 %. The sector also accounts for an average of 82% of foreign exchange earnings and approximately 70 percent of the population derives their livelihoods directly or indirectly from the sector.

The main export crops grown in Zanzibar include: cloves and spice (such as chilies, black pepper, and cinnamon, cardamom, ginger, nutmeg and lemon grass. However the main export cash crop is cloves, which is mainly grown in Pemba amounting to 60 percent of cultivated land on the island), and seaweed. Whereas, rice, banana, cassava, sweet potato, yams, are the main food crops grown in Zanzibar. Cereals such as maize, millet and sorghum are also grown although not widely. The agricultural sector has two major zones; the plantations and the coral rag zones. Total cultivated land is estimated at 370,645 acres with very small landholdings ranging from 1 and 1.5 hectares.

The Zanzibar agriculture sector is dominated by small scale subsistence farming characterized with low use of production enhancing technologies and heavily dependence on rain fed agriculture. There is also lack of relevant marketing system. Most of farmers practice intercropping of different annual and permanent crops in complex association.

3.2.8 Irrigation Potential

Zanzibar agriculture relies highly on the incidence of seasonal rainfall and this makes production vulnerable to adverse rainfall events. While aggregate levels of rainfall are high, this may be poorly timed relative to crop requirements. Opportunities are high for expanding irrigation. According to Zanzibar Irrigation Master Plan the potential land for irrigation farming in Zanzibar is 8,521ha. Currently less than 700ha are under irrigation. Irrigation development is constrained low efficiency of schemes due to improper canal construction and poor water

management. According to the agricultural census 2002/03 only 7 percent of the agricultural households in Zanzibar practice irrigation (of which the majority live in Unguja).

Paddy is the major irrigated crop. However, there are few farmers who grow vegetables and fruits under irrigation system. Improving rain water harvesting systems could be an ideal way of enhancing irrigation farming. There is also a high potential for surface irrigation using existing rivers, streams and water catchments particularly for vegetable and rice production. Given the seasonality in crop production and persistence climate change investment in expansion of land under irrigated agriculture and water harvesting techniques would be the most reasonable option for stable and higher agricultural productivity. The existing area for irrigation paddy farming in different districts is as shown in the table below:

Table 3.12: Existing area for Irrigation in different districts in Zanzibar

District	S/N	Scheme	Existing Area(ha)	Households	Beneficiaries	Paddy Yield t/ha)
West	1	Mtwango**	108	300	1500	4
	2	Bumbwisudi	150	1500	7500	3.8
	3	Mwera	12	100	500	3.6
	4	Kianga	15	150	750	4.5
Central	5	Koani**	25	250	1250	1.2
	6	Cheju	64	640	3200	3.3
	7	Mchangani**	20	200	1000	2
	8	Uzini	19	190	950	3
North A	9	Bandamaji**	15	150	765	1.2
	10	Kibokwa	52	520	2652	3
South	11	Muyuni	10	100	500	2.2
Wete	12	Kwalempona**	15	150	780	2
	13	Mangwena	10	87	452	3.5
	14	Weni	16	93	484	3.5
	16	Tungamaa	5.6	32	166	3.5
Micheweni	17	Saninga	16	321	1670	3
	18	Kinyakuzi	7.2	72	374	3.3
Chakechake	19	Dobi1**	3	30	156	3
	20	Dodi 2**	25	250	1300	2.2
	21	Tibirinzi	6	60	312	3
Mkoani	22	Machigini**	22.3	223	1160	2
	23	Kimbuni	4	40	208	2.5
	24	Makombeni	14	169	879	1.5
Total			634.1	5627	28508	

*NB. **The schemes selected for ERPP project Zanzibar.*

3.2.9 Livestock Production and Population

The Zanzibar livestock subsector is mostly small scale extensive production system using local breeds with low genetic potential. Over 50 percent of Zanzibar households own livestock and 23 percent own low producing indigenous cattle. Livestock contribute 3.8 % of the Zanzibar GDP. Cattle provide high protein diets, draught power, serve as a live bank and are important in many religious and social functions. At present average annual consumption per capita of red meat and milk is estimated at 3 to 4 kg and 11 litres respectively. Cattle and goats slaughtered for urban markets have, in recent years, averaged 5000 and 4000 head annually. Climatic and ecological limitations constrain horizontal expansion of this sub-sector.

The livestock population in 2008 was projected at 194,104 heads of cattle, 61,240 goats, 319 sheep, 1,274,467 chickens, 63,934 ducks and number of other small stocks and animals (National Sample Census of Agriculture, 2003). Out of the total cattle population, about 95 percent is made up of local zebu cattle which are kept under extensive systems and the remaining comprise of crossbreds raised under semi-intensive or intensive systems. Chickens are the most important poultry in Zanzibar with 89 percent of them being indigenous breeds raised under free range or semi-free range systems. An estimated 91 percent of livestock keepers raise cattle, 26 percent goats, 70 percent poultry, 0.2 percent sheep and only 0.1 percent pigs. The average herd size kept per households is 5 cattle, 6 goats and 16 chickens.

3.2.10 Natural Resources

The importance of forestry in reducing poverty is highlighted in MKUZA with the aim of increasing access to affordable and sustainable energy by 2010. The forestry sub sector and natural resources has been tasked with managing and developing forest resources in a sustainable manner. To achieve the goals set out in MKUZA the forestry sub sector and natural resources is set to promote research on sustainable use of natural resources, integrating principles of sustainable development into policies and programmes and projects, promoting integrated bio-diversity conservation, enhancing the capacity of actors and stakeholders of natural resources management and enhancing wood-fuel production and management. Currently the subsector is comprised of six sections; Mangroves Conservation, Coral Rag Forest Conservation, Forest Protected Areas, Farm Forest and Wild Animals.

Mangroves Conservation

Mangroves are one of the most important forest resources that provide high quality construction materials and wood fuel. They provide protection for seashores against waves and help the sedimentary stability of the coast, provide important breeding sites for fish and other marine animals. They provide a valuable ecosystem function that extends to coral reef. According to Zanzibar Wood Biomass Survey of 2013, there are 16, 488 ha in Zanzibar of which 5274ha can be found in Unguja whilst the corresponding number for Pemba is11214,ha. However despite their ecological importance, mangroves are under great utilisation pressures that threaten their existence. Overcutting of mangroves for salt making negatively affected the mangroves ecosystem.

Beekeeping

Beekeeping has gained extra focus from 2010. The importance of this subsector was highlighted in ZATI, which emphasized promoting investment from both the public and private sector in order to transform beekeeping into a profitable commercial sector. ZATI also stressed the importance of promoting research, training and extension services in this sector. In 2011, Zanzibar had 1237 bee hives operated by different individuals and groups. Between 2006 and 2008 the Kiwengwa-Pongwe Project helped the local community by distributing 46 beehives.

Coral rag Conservation

The coral rag forest is a typical coastal forest eco-system comprising of ever green thicker with dense woody vegetation mostly found along the eastern belt of Zanzibar and south of Unguja Island. There are about 86,842ha of coral rag forest in Zanzibar, it is the most important source of forest products such as fruits/food, building materials, medicinal and handcrafting materials. Coral rag forest form

Forest

Based on the 1997 Zanzibar Wood Biomass Survey, Forest vegetation in Zanzibar covers about 63,908 ha equivalent to 23.7% of the total land area. This involve bush and tall trees in coral rag areas (6,964ha), mangroves (19,748ha), high forest and forest plantations (9,505ha), coconut plantation (6,958ha) and mixed wood vegetation (19,733ha) (Ali and Leskinen, 1997). Zanzibar Forest Protected Areas (FPAs) under government administration are totaling approximately 12,476 ha (Department of Commercial Crops, Fruits and Forestry, 2009). If added to the proposed Jambiani – Muyuni Forest reserve (4,000ha) it reaches about 16,000ha as presented below.

Zanzibar's forests, which form part of the East Africa Coastal Forests Eco-Region, are one of the world's 200 biodiversity hotspots. They are an important part of Zanzibar natural heritage which represents remnants of high forest that once covered Zanzibar. They play important roles in water catchments, soil stabilization, environmental protection and act as a refuge to many animal species some of which are endemic to the area. In terms of employment, out of the 70,000 people employed by the private sector, 10,000 are estimated to engaging in forestry activities. Of the rural population, 80% are thought to derive at least part of their daily livelihoods from market or non-market (i.e., subsistence) forest activities.

Plantation Forest

There are a number of state owned forest plantations in Zanzibar; these include Kibele, Chaani, Dunga, Jendele and Unguja Ukuu in Unguja and Kiuyu Maziwa Ngombe in Pemba which cover a total area of 2,788 ha. However, limited financial resources have resulted in poor management of state plantations.

Clove plantations are the most significant vegetation in Zanzibar; particularly in Pemba where the clove tree cover 15,326ha islands vegetative cover was dominated by cloves to about 80%. Apart from their economic role, cloves trees play an equally significant role in provision of quality wood fuel, building poles and soil stabilization. However in recent years there has been an increase in the cutting of cloves trees because of increased demand of wood-fuel in Unguja and Pemba.

Coconut is another important cash crop grown in Zanzibar. The dominant species is the East African Tall and is widely distributed in deep soil areas and along the coastal fringes. Coconut trees are versatile in use; they are used for wood energy and timber, roofing materials for tourist hotels, medicine and food. The coconut production has declined significantly over the years due to a number of reasons including ageing of many coconut trees, massive cutting of trees for various uses such as construction and carpentry and increased use of non matured fruit (*madafu*) particularly due to the expanding tourism sector and improved income of certain segment of people and poor planting exercises of new trees.

Wild Life

Zanzibar has rich and diverse spectrum of wild animals including birds, small mammals, reptiles, amphibians and insects some of which are endemic and under severe threats due to indiscriminating hunting and habitat destruction. These animals are in particular danger during the national hunting day which is done in the pretext of vermin control. This results in the decline of the population of wild animals such as Zanzibar leopards and wild pigs. Other important species of wild animals include red colobus monkey, Ader's duicker, Pemba flying

fox and various species of birds. There has been a considerable pressure for resources uses which have affected negatively most of these species of wild animals. A lot need to be done to estimate to what extent these impacts have affected each of these important species and measures to restore their populations.

Protected Areas

There are a number of protected areas in Zanzibar. These include patches of high forests at Jozani-Chwaka Bay National Park, Ngezi-Vumawimbi Nature Forest Reserve, Masingini catchment area, Msitu Mkuu Forest, Ras Kiuyu Forest and Kiwegwa-Pongwe Forest Reserve (table xxx below). These protected areas are endowed with quality ecosystems of high and unique bio-diversity values. These include endemic species and subspecies such as red colobus monkeys, Ader's duicker, Cassina Jozani and many others. There are also a number of small patches of high forest in some community managed areas. These high forest areas play an important role in water catchments, soil stabilization and act as a refuge to many animal species. To protect these areas a number of agreements have been issued to communities residing near forest areas to participate fully in conservation initiatives.

Table 3.13 Forest Protected Areas of Zanzibar (2009)

No	Name of the Forest Protected Area	Area(ha)
1	Jozani-Chwaka Bay National Park	5,000
2	Kiwengwa-Pongwe Forest Reserve	3,481
3	Ngezi-Vumawimbi Nature Forest Reserve	2,900
4	Ras Kiuyu Forest Reserve	270
5	Masingini Forest Reserve	285
6	Msitu Mkuu Forest Reserve	180
7	Jambiani-Muyuni Forest Reserve (Newly proposed)	4,000
	Total	**16,476**

Source: Department of Cash Crop Fruits and Forestry (2009)

Zanzibar has rich and diverse spectrum of wild animals including birds, small mammals, reptiles, amphibians and insects some of which are endemic and under severe threats due to indiscriminating hunting and habitat destruction. These animals are in particular danger during the national hunting day which is done in the pretext of vermin control. This results in the decline of the population of wild animals such as Zanzibar leopards and wild pigs. Other important species of wild animals include red colobus monkey, Ader's duicker, Pemba flying fox and various species of birds. There has been a considerable pressure for resources uses which have affected negatively most of these species of wild animals. A lot need to be done to estimate to what extent these impacts have affected each of these important species and measures to restore their populations.

Fisheries

Fishing is the second most important economic activity (next to crop production) in the rural areas. The activity is mostly done by man while women are concentrated with seaweed farming and fetching of seashells. Fisheries contribute to about 7.1% of GDP. Fish is main source of animal protein in Zanzibar. Over the last five years (between 2009 and 2013), the average annual fish catch in Zanzibar is about 22,112.46 tons per year (MFL). About 99 percent of the catches are consumed locally. Annual per capita fish consumption is estimated at 12 kg. Fish contribute 100 percent of the animal protein supplies for lower income families and about 22 percent of average family expenditure on food. In view of this important role,

further exploitation of small-scale coastal fisheries and offshore fishing is considered an important untapped potential area for sectoral investment.

Seaweed Farming

Seaweed farming in Zanzibar is predominantly women activity. It has been the most important economic opportunity that provides self-employment to thousands of rural coastal women and enables them to earn independent income apart from that of their husbands. This farming activity increases purchasing power of women and brings about their social and economic empowerment. Seaweed farmers in Zanzibar sell their raw produces to seaweed companies existing in Zanzibar. These companies provide materials to farmers free of charge and farmers sell the product to that companies that have provided them the materials for farm establishment. Over the last six years the average annual seaweed production has been 12,118 metric tons of dry seaweed per year. Currently, local seaweed companies buy from farmers and export 7,500 metric tons of dry annually. This is only 62% of the total annual local production.

3.2.11 Environmental issues

Environmental impacts have been observed to be caused by a number of factors such as increased population, global trends on climatic changes, increased traffic in land and sea causing increased emissions into the surroundings. Human activities land and sea based such as irresponsible fisheries, poor agricultural practices, deforestations and encroachment of water catchments areas and poor drainage system are among the important activities on environmental destruction in Zanzibar. There are have been some efforts at national and sector levels that were taken to minimise the environmental impacts including policy and regulatory frameworks which have witnessed a tremendous institutional changes to address adequately environmental issues as a cross sectoral issue which have shown certain success on the area. The promotion of organic agriculture reduces the use of chemicals that could contaminate water and soil. Maintaining biodiversity which could influences a huge range of ecosystem processes that contribute to the sustainability of life on earth. Soil organisms maintain critical processes such as carbon storage, nutrient cycling and plant species diversity. Soil biodiversity plays a role in soil fertility, nutrient uptake by plants, formation of soil organic matter, nitrogen fixation, the biodegradation of dead plant and animal materials.

Water Resources

Ground water is the main source of water for both Agriculture and domestic consumption in Zanzibar. There are only few natural rivers and ponds. Most of them get dried during summer's season. With exception of Mtwango, Kianga, Mwera, Makombeni, Saninga, Tibirinzi and Machigini, all remaining irrigation schemes in Zanzibar use underground water from boreholes. Water resources are compelled with varying demands by different sectors of the economy. Water is needed in food production, domestic and industrial uses. While there have been different sources of water such as boreholes, springs, caves, local wells and small rivers the ground water source remain to be an important source of water in Zanzibar.

There have been significant developments in water resources sector at policy and institutional level aiming at improving the quality of services and instituting costs sharing element to domestic and industrial water users. In agriculture sector food production depends on appropriate and efficient water use and conservation practices. Achieving food security is a high priority and agriculture must not only provide food for rising populations but also conserve water for other uses. The challenge is to develop and apply water saving technologies and management

methods to enable communities to participate in food production. Some efforts were observed in this area such as using drip irrigation technologies and other practices in agriculture that promote moisture retention in the soils including promotion of water harvesting technology. Despite some studies done to establish the ground water reservoir more need to be done to update the situation. Collaborations between the sector on irrigation and water harvesting and the water sector are important in ensuring that the agriculture sector goals are met.

3.2.12 Poverty and inequality levels

Broadly, food security in Zanzibar is premised on the flow of incomes to the household for the purchase of food. Monetary income is low in most areas of Zanzibar and the general level of poverty is high. According to Household Budget Survey (2009/10)[4] the incidence of basic need poverty has declined from 49% in 2005 to 44% in 2010. This is about 1 percentage point decline annually. Apparently, the percentage point decline in basic need poverty is evenly shared between urban and rural areas.

The incidence of food poverty has only declined marginally from 13.18% in 2005 to 13.04% in 2010 (HBS, 2009/10). The insignificant decline in food poverty is partly due to increases in costs of food items globally, a phenomenon observed towards the end of the 2000s. Zanzibar, being a net food importer, such phenomenal increased in food price could have substantial lose in welfare. The lack of a decline in food poverty is reflected in the modest increase in food share in the total expenditure. The share of food expenditure in total expenditure increased from 55 percent in 2004/06 to 57 percent in 2009/10. In general the incidence of poverty is higher in rural areas compared to urban areas. Similarly, on average Pemba districts had higher incidences of both basic needs and food poverty then Unguja districts (HBS, 2009/10).

3.2.13 Agriculture production

Agriculture production in Zanzibar is dominated by small-scale subsistence farmers characterized with low use of modern production inputs. The most important crops grown in Zanzibar includes: rice, cassava, sweet potatoes, bananas, plantains, and yams. Cereals such as sorghum, maize and millet are also grown although not widely (in the 2002/3 agricultural season sorghum, maize and millet together formed only 13 percent of the total cereal production in Zanzibar, with rice constituting 87 percent of total cereal production). In Zanzibar rice is considered as a major staple food. The government maintains the objective of increasing self-sufficiency level in rice from 20% (currently) to 60% by 2015. Currently, a large proportion (80%) of rice consumed in Zanzibar is imported. In general, paddy yields are low with production levels far below potential yields. According to 2013 statistics average yields of rainfed rice is only 1.4 tons/ha, against a potential of 2.4 tons/ha, while productivity of paddy (irrigated rice) was 4.0 tons/ha, as compared to a potential of over 8 tons/ha. Domestic grain supplies are also undermined by high levels of post-harvest losses due to poor handling, inadequate processing and poor storage technology. It is estimated that the average wastage of rice is 13% per year (ATI, 2010).

The production of different crops from the period of five years (2008 to 2012) is depicted in the table 3.14 below.

[4] Zanzibar Household Budget Survey (2009/10).Final Report

Table 3.14: Annual productions of selected food crops in tons between 2008 and 2012

Crops	2008	2009	2010	2011	2012*
Maize	1,933	2,063	3,112	3,281	857
Sorghum	615	457	572	512	484
Paddy	20,889	26,980	21,014	23,702	6,372
Cassava	153,136	195674	229,284	273,342	192,073
Banana	103,145	100,873	102258	110,250	97,935
Sweet potatoes	55,305	53,596	58,953	92,715	31,768
Yams	3,516	11,373	7,487	4,212	3,564
Tania	8,459	5,883	6443	4,940	4,092
Groundnuts	465	320	432	401	407
Pigeon peas	1,682	2,292	510	1,026	641
Cowpeas/ Green gram	1,719	1,394	1,103	1,177	317

*Source: Socio – Economic Survey 2013; Statistical Report- Preliminary Results Office of the Chief Government Statistician Zanzibar (NB. * Data in this year are projections)*

3.2.14 Rice Marketing in Zanzibar

Incentive to expand rice production for market in Zanzibar is constrained by shortage of land resource suitable for production of this crop. Most of rice produced in Zanzibar is consumed locally by producers or their neighbours. However, in the recent years there has been a tendency of some rice growers (particularly irrigated rice) to sell part of their harvest mostly to consumers. Similarly some farmers of upland rice occasionally sell part of their harvest to shopkeepers to cater for their urgent need of cash for different household requirements.

Incentives to expand production for the market are limited. The marketing system in Zanzibar tends to be tightly controlled by a network of intermediaries, resulting in a situation that does not give farmers an equitable benefit for their products, whilst allocating high margins to the middleman. There also tends to be a large margin between farm gate and consumer prices because of high grain assembly and transport costs. Farmers have limited access to market information and have difficulty determining what is a fair producer price. Low farmgate prices, and market uncertainty discourages the adoption of improved seed and fertilizer technologies.

4. POLICY AND INSTITUTIONAL FRAMEWORK

This ESMF has been designed to guide all investments funded under the ERPP will comply with all applicable environmental laws of the United Republic of Tanzania (URT) and the Environmental and Social Safeguard Policies of the World Bank. In this chapter, the policy, legal and institutional framework for environmental management in URT and the World Bank's safeguards policies and their applicability will be presented and discussed.

4.1 Mainland Tanzania

4.1.1 Policy and Legal Framework for Environmental Management

With regards to the management of the bio-physical environment throughout Tanzania, the overall responsibility lies with the Office of the Vice President. There is also a cross-sectoral technical committee for EIA review that may compose members from various sectors. The members of the Technical Review Committee (TRC) are:

- The Ministry responsible for Environment (Vice-President's Office)
- Ministry responsible for forestry, fisheries, wildlife and tourism
- Ministry responsible for Urban and Rural Planning
- Ministry responsible for Agriculture
- Ministry responsible for Water
- Ministry responsible for Works and Communication
- Ministry responsible for Industry and Trade
- Institute of Resource Assessment – University of Dar es Salaam
- National Environment Management Council (NEMC) - secretariat to the TRC.

<u>The Office of the Vice-President</u>

The vision of the Vice-President's Office (Division of Environment) for Mainland will be charged for sustainable environment for the ERPP.

The primary mission of the Vice-President's Office (VPO) is "to assist the President in all governmental matters, facilitate and support the Vice President of the United Republic of Tanzania to effectively play the role of first assistant to the President of the Republic in leading the nation to greater prosperity. In particular, the Office has the mission of coordinating all Union matters, Environment management efforts and linkage between the Government of United Republic of Tanzania and Government of Zanzibar on non-union matters.

<u>The National Environment Management Council (NEMC)</u>

The National Environment Management Council (NEMC) is corporate body with perpetual succession and common seal, established in the Office of the Vice President.

The NEMC was established so as to undertake Enforcement, Compliance, Review and monitoring of Environmental Impact Assessment and in that regards, facilitate public participation in environmental decision making, exercise general supervision and coordination over all matters relation to the environment assigned to the Council under EMA

number 20 of 2004 or other written law

Environmental Management Act (EMA), 2004

The EMA CAP 191 No. 20 of 2004 provides the legal and institutional framework for the management of the environment and implementation of the nation's environmental policy. The legislation is the framework that facilitates coherent administration of the environment in the country.

Section 81 of the Environmental Management Act (EMA) cites the obligation to undertake an EIA prior to the commencement or financing of a project which is still required even if the Proponent has a permit or license under any other written law. Section 81 also cites that not undertaking an EIA when required is an offence.

The EMA, as described in Part VI EIA and Other Assessments, also empowers the National Environmental Management Council (NEMC) to screen, review and determine the types of development projects subject to EIA study. The Act outlines projects that require a full EIA or those that may be subjected to full EIA, after NEMC determination. Under this Act, the NEMC is mandated to undertake enforcement, compliance, review and monitoring of environmental impact assessment and has a role of facilitating public participation in environmental decision making, exercise general supervision and coordinating over all matters relating to the environment. The process for undertaking an EIA and related assessments in Tanzania is presented in the Environmental Management Act, 2004 part VI sections 81 to 103 and it's subsequent in the Environmental Impact Assessment and Audit Regulations, 2005 – G.N. No.349 of 2005, regulations 12 to 43.

Public participation is required during the scoping stages and while fulfilling the terms of reference for the impact assessment in the EIA process. The operator is responsible for identifying interested and affected parties and ensuring that all parties concerned are given adequate opportunity to participate in the process. A public information program is initiated, and public notices are issued during the scoping and EIA stages. Whenever a strong public concern over the proposed project is indicated and impacts are extensive and far-reaching, the NEMC is required to organize a public hearing. The results of the public hearing should be taken into account when a decision is taken whether or not a permit is to be issued.

National Environmental Policy (NEP), 1997

Tanzania published its National Environmental Policy (NEP) in December 1997 and the National Conservation Strategy for Sustainable Development, the National Environmental Action Plan (NEAP) and specific sectoral policies such as those on land, mining, energy, water, agriculture, forestry, wildlife, population and fisheries. The NEP recognizes the EIA process as a means of ensuring that natural resources are soundly managed, and of avoiding exploitation in ways that would cause irreparable damage and social costs.

The NEP seeks to provide the framework for making the fundamental changes that are needed in order to incorporate environmental considerations into the mainstream of decision making. The NEP seeks to provide guidance and planning strategies in determining how actions should be prioritized, and provides for the monitoring and regular review of policies, plans and programs. It further provides for sectoral and cross-sectoral policy analysis, so that compatibility among sectors and interest groups can be achieved and the synergies between them exploited. The overall objectives of the NEP are, therefore, the following:

- To ensure the sustainability, security and equitable use of resources in meeting the basic needs of present and future generations without degrading the environment or risking health and safety.
- To prevent and control the degradation of land, water, vegetation, and air, which constitute our life support systems.
- To conserve and enhance our natural and man-made heritage, including the biological diversity of Tanzania's unique ecosystems.
- To improve the condition and productivity of degraded areas, as well as rural and urban settlements, in order that all Tanzanians may live in safe, healthy, productive and aesthetically pleasing surroundings.
- To raise public awareness and understanding of the essential links between the environment and development, and to promote individual and community participation in environmental action, and
- To promote international cooperation on the environment agenda, and expand participation and contribution to relevant bilateral, sub regional, regional, and global organizations and programs, including the implementation of treaties.

4.1.2 Legislative Framework for the Management of the Environment

Under Article 27 of the Constitution, the public is called upon to ensure that the natural resources of the country are managed properly:

(1) Every person is obliged to safeguard and protect the natural resources of the United Republic, State property and all property jointly owned by the people

(2) All persons shall by law be required to safeguard State and communal property, to combat all forms of misappropriation and wastage and to run the economy of the nation assiduously, with the attitude of people who are masters of the fate of their nation.

The table below lists the various policies relevant to environmental management in URT.

Table 4.1: Key policies and laws relating to environmental management for Mainland Tanzania

Act	**Key Elements**	**Implementing Authority**
The Environmental Management Act 2004	The Act provides a legal and institutional framework for sustainable management of environment, outlines principles for different environmental functions, provides a basis for implementation of international instruments on environment, provides for implementation of the National Environmental Policy, and repeals the Nation Environment Management Act 1983.	National Environmental Management Council
National Environmental Management	The Act provides for the establishment of the NEMC, as well as all functions and other matters	National Environmental

Council (NEMC) Act, No. 19 of 1983	related and incidental to its establishment.	Management Council
Wildlife Conservation Act, No. 12 of 1974, as amended	The Act protects wildlife and vegetation by restricting the utilization of wildlife to license-holders. The use of sensitive wildlife habitats is restricted during certain times of the year or for specified periods.	Ministry of Tourism and Natural Resources
Fisheries Act, No. 6 of 1970	The Act limits annual catches. Specific regulations were introduced in 1973 and 1982, putting limitations on methods of fish harvesting, including outlawing of dynamiting and poisoning.	Division of Fisheries, Ministry of Tourism and Natural Resources
Water Utilization and Control Act, No. 42 of 1974	The Act establishes temporary standards for public use, as well as effluent discharge standards.	Ministry of Water and Livestock Development
Urban Water Supply Act, No. 7 of 1981	The Act gives the National Urban Water Authority powers to monitor and control surface water and groundwater pollution and specifies punitive measures for violators of this act.	National Urban Water Authority, Ministry of Water and Livestock Development
Forestry Policy of 1993	The revised Policy continues to recognize the important role of forests in the maintenance of the environment, the provision of forestry products and the protection of watersheds and biodiversity.	Division of Forestry, Ministry of Tourism and Natural Resources
Land Act, No. 4 of 1999	Private Group Property is given either through Granted Rights in General and Reserved Land (Land Act, Section 19) or through Customary Rights in Village Lands (Village Land Act, Section 22). Provision is also made for holding land by joint occupancy or occupancy in common (Land Act, Part XIII).	Ministry of Lands and Human Settlement
Village Land Act, No. 5 of 1999	The Act requires each village to identify and register all communal land, and obtain the approval of all members of the village for identification and registration (Village Assembly, Section 13). A Register of Communal Land (Section 13(6)) is to be maintained by each Village Land Council, and land cannot be allocated to individuals, families, or groups for private ownership (Section 12(1)(a)).	Ministry of Lands and Human Settlement
Local (District and Urban)	Local Authorities are empowered to make by-laws regarding the protection of soil, agriculture, water supplies and other natural resources. The Act	Local Authorities

Authorities Act, No. 7 of 1982	contains provisions to protect human health and regulate pollution problems.	
Town and Country Planning Ordinance, of 1966, Chapter 378	The Ordinance was intended to establish a land-use planning scheme for designated areas. The National Land Use Planning Commission was established to advise Government on land conservation and development.	National Land Use Planning Commission
Public Health, Sewerage and Drainage Ordinance, Chapter 336	The Ordinance prohibits the discharge of certain substances into sewers. Violation of the Ordinance is an offence, and penalties may be imposed on offenders.	Ministry of Health and Social Welfare

4.2 Zanzibar

The Office of the First Vice President (Department of Environment (DoE) - Zanzibar)

The role of the institution responsible for environment in the administration of environmental matters is usually connected with the other institutional arrangements concerned with Agriculture, Health, Water, Fisheries, Forestry, Lands, Energy, Tourism, ZIPA, and the Local Government Authority. At present, the Department of Environment (DoE) is placed under the newly instituted First Vice President Office, Zanzibar. The current position of DoE under the newly formed office has re-established the importance of environment management and enforcement sector in Zanzibar. Since Zanzibar has not established Environmental Management Authority (ZEMA) with autonomous administrative powers as enforcing body that support implementation of the legislative requirements, the DoE remains responsible institution for enforcing all matters related to environmental management, policy guidance, setting standards and ensuring that all development projects in Zanzibar comply with all relevant environmental laws, rules and regulations. The DoE is responsible for:

- Issuing EIA registration forms to operators,
- Review and recommend for approval/clear PEIA's,
- Provide relevant information on policies and other administrative requirements,
- Assist the general PEIA process administration,
- Train participating farmers on environmental and social safeguard issues and mitigation measures
- Review, Clearance and Approval of the ESIA's/process for Category A and B sub projects/activities of the GASFP,
- Training of District Staff (DADO, District Environmental Officer, District Forest Officer, Cooperative Officer, Lands Officer and Extension Officers) to carry out monitoring
- Periodic/oversight monitoring

Since the Department of Environment (DoE) under the First Vice President Office is considered to provide environmental management for Zanzibar, the MANR in collaboration with DoE will (i) conduct environmental audit of the project interventions; and (ii) provide on

the ground ESMF performance reviews/audits both for enforcement purposes, but more importantly to reinforce the training and to keep farmer groups and the District subject matter specialists cognizant of their ESMF responsibilities. With regards training, the DoE in collaboration with MANR will train District subject matter specialists according to the Training Program contained in section 8.4 of this chapter, thereby providing capacity for the Districts to fill this position with suitably trained personnel. The MANR in collaboration with DoE will also be responsible for carrying out the following: (i) ensuring the National and District activities of the ERPP comply with Zanzibar's environmental laws and requirements, and that of the World Bank's triggered Safeguard Policies, (ii) for receiving, reviewing and commenting on, requiring revisions where necessary and clearing of Project category A and B sub project activity ESIA's prior to approval of the Projects by their respective Districts, (iii) reviewing and compiling monitoring reports of the district authorities and (iv) issue directives based on monitoring and evaluation reports, to the operators and the project leader and as well to the district subject matter specialists.

The management and protection of the environment and its biodiversity resources in is guided Zanzibar by that government's environmental and forest policies and laws, namely: Environment Management for Sustainable Development Act. No 2 of 1996 and Forest Resources Conservation and Management Act No. 10 of 1996; Zanzibar Forest Policy of 1995 (reviewed 2013); Environmental Policy of 1992 (reviewed 2012); and the Fisheries Policy. All these legal frameworks along with Zanzibar Environment Action Plan (ZEAP), Zanzibar Forest Resources Management Plan (2009-2020), Community Forestry Management Agreement and integrated coastal zone management committees provide legitimacy to Zanzibar environment protection and natural resources management.

Table 4.2: Key policies and laws relating to environmental management for Zanzibar

Act	**Key Elements**	**Implementing Authority**
The Environment for Sustainable Management Act No. 2 of 1996	The Act provides for legal and institutional framework for sustainable management of environment, outlines principles for different environmental functions, provides basis for implementation of international instruments on environment and provides for implementation of the National Environmental Policy.	Department of Environment, Zanzibar
Forest Resources for Conservation and Management Act No. 10 of 1996	The Act protects forest, wildlife and natural vegetation by restricting the utilization of wildlife and forest resources. Provides guideline for forest reserve establishment including community forest management	Department of Forestry and Non-renewable Natural Resources, Ministry of Agriculture and Natural Resources, Zanzibar
Zanzibar Forest Policy 2012 (revised)	The Policy continues to recognize the important role of forests in the maintenance of the environment, the provision of forestry products and the protection of watersheds and biodiversity, and climate change issues	Department of Forestry and Non-renewable Natural Resources, Ministry of Agriculture and Natural Resources,

		Zanzibar
Fisheries Policy	The Policy is responsible for marine environmental management. It has acknowledge issues related to environment as sustainable fishing practices; control of destructive fishing gear; sustainable utilization of offshore resources; and increasing environmental conservation awareness among fishermen	Department of Fisheries and Marine Product, Ministry of Fisheries and Livestock, Zanzibar
Zanzibar Agricultural Policy	The policy recognizes that environmental degradation is an issue of major concern in agricultural development; is mainly attributed to lack of public awareness on the preservation and conservation of environment. Other attributed factors include the rate of population growth and density; and use of dangerous agro-chemicals and pesticides in agricultural activities. The policy recognizes that environmental protection is a prerequisite management tool for maximum achievement of sustainable agricultural production. The policy recommends the establishment of a special unit to co-ordinate proper mainstreaming of environmental norms into agricultural development activities.	Department of Agriculture, Ministry of Agriculture and Natural Resources, Zanzibar
The District and Town Councils Act no.4 of 1995, Zanzibar	Local Authorities are empowered to take all necessary measures for the prevention of soil erosion and the protection of crops; to monitor or regulate the use of any agricultural land as defined and allocated under the land use plan; prescribe steps to be taken by the occupier of any agricultural land for the purposes of maintaining and improving its productivity and preserving the fertility of the soil; and require adult resident of the area, who occupy agricultural land in accordance with customary law to cultivate that land and other residents to take measures to require and cultivate land subject to the laws of the Council	District Councils, Zanzibar
Local Government Policy, Zanzibar	The policy recognizes essential linkages between the local communities and environmental protection and ensures sustainable use of the country's limited carrying capacity in the exploitation of natural resources. The policy outlines the roles and mandate of local authority and community relating to the protection and conservation of environment and natural resources; it supports the establishment of community groups that will be engaged in environmental management programmes such as waste management and environmental education.	Local Authorities, Zanzibar
Plant Protection	The Act prohibits importation of any plant material,	Plant Protection

Act 1997, Zanzibar	pests, beneficial organism or soil into Zanzibar except under the provisions provided by the act and the entry points declared by the act. Likewise, it requires viable seeds (imported for purpose of sowing by farmers or research) of any plant species imported into Zanzibar possess import permit to be issued prior to the importation (including probative materials) accompanied with phytosanitary certificate from the country of origin.	Department, Ministry of Agriculture and Natural Resources, Zanzibar
Zanzibar Disaster Management Policy	The Policy aim to develop as much as necessary the national capacity to coordinate and collaborate on comprehensive disaster management programs among the principal players at all intersectoral levels. Issues discussed in the policy include erratic rainfall patterns, food shortages, marine accidents, fire outbreaks, terrestrial and marine degradation, depletion of mangrove forests, and waste management.	
Zanzibar Education Policy	Education policy recognises the necessity of incorporating environmental education into the school curricula that includes the environmental management and conservation of land, water and air.	Ministry of Education, Zanzibar
Zanzibar Water Policy	The policy recognizes the importance of environmental consideration in the development initiatives. It clearly states that the development of water and sanitation programmes should be done in a way that is not harmful to the environment and that the utilization of water by one generation should not in any way adversely affect the prospect of utilization by subsequent generations. The policy pays special attention to the implementation of EIA, environmental monitoring and control, water security, water pollution, soil degradation, depletion of water resources, drinking water quality, waste disposal, hygiene, drainage and sanitation as requisite issues towards provisions and supply of potable water. The policy calls on environmental authorities to provide environmental advisory and guidance so as to ensure that the set objectives for the water policy with respect to environmental conservation and protection are properly achieved.	Zanzibar Water Authority

4.3 International Conventions

Tanzania is a party to many international agreements on Biodiversity, Climate Change, Desertification, Endangered Species, Ozone layer protection, Marine Life Conservation,

wetlands etc. Examples are:

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)
- Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris (1972)
- Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons, and their Destruction, London (1972)
- Convention on Biological Diversity
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1973)
- Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa, Bamako, Mali (1991)
- UN Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification particularly in Africa (1994)
- Lusaka Agreement on Co-operative Enforcement Operations Directed at illegal Trade in Wild Fauna and Flora (1994)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- Phyto-sanitary Convention for Africa, Kinshasa (1967)
- UN Convention on the Law of the Sea (1982)
- UN Framework Convention on Climate Change (UNFCCC) adopted in May, 1992; signed by Tanzania on 12 June, 1992, ratified by Tanzania on 1 march 1996
- Vienna Convention for the Protection of the Ozone Layer, adopted on 16 September 1987. Acceded to by Tanzania on 16 April 1993
- Ramsar convention on Wetlands (1971)
- United Nations Framework Convention on Climate Change (1994)

4.4 World Bank Safeguards Policies

The Project has been assigned an EA category B due to the overall low to moderate risk stemming from the small-scale nature of most project investments including the limited expansion of irrigated area. All World Bank Safeguards Policies and their applicability for this project are listed in the table below.

Table 4.2: World Bank Safeguards Policies and their Applicability

Safeguard Policies	**Applicable**
Environmental Assessment OP/BP 4.01	**Yes**
Natural Habitats OP/BP 4.04	**Yes**
Forests OP/BP 4.36	**No**
Pest Management OP/BP 4.09	**Yes**
Physical Cultural Resources OP/BP 4.11	**No**
Indigenous Peoples OP/BP 4.10	**No**

Involuntary Resettlement OP/BP 4.12	**Yes**
Safety of Dams OP/BP 4.37	**No**
Projects on International Waterways OP/BP 7.50	**No**
Projects in Disputed Areas OP/BP 7.60	**No**

A complete description of the bank safeguards and their triggers for applicability can be found on the World Bank's official web site: http//www.worldbank.org/.

Environmental Assessment (OP/BP 4.01)

This policy requires an Environmental Assessment (EA) of projects/programs proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making. The EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed investments. The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects; and transboundary and global environmental aspects.

The environmental and social impacts of the ERPP are envisaged to come from the project activities and investments contained in the irrigation schemes and construction of marketing infrastructure / warehouses which will receive financing under the Project. Therefore, the EA process calls for the GoT to prepare an Environmental and Social Management Framework (ESMF) report, which will establish a mechanism to determine and assess future potential environmental and social impacts during implementation of the Project activities and investments contained in the approved ERPP. The ESMF will also set fourth mitigation, monitoring and institutional measures to be taken during implementation of these activities, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

The policy further calls for the ERPP as a whole to be environmentally screened to determine the extent and type of the EA process. The ERPP has thus been screened and assigned an EA Category B. This category of projects/programs is defined as follows:

Category B projects are likely to have potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – and are less adverse than those of category A projects. These impacts are site specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. The EA process for category B projects examines the potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. Therefore, this ESMF sets out the environmental and social review and mitigation strategies to be implemented under the ERPP. This process requires the implementer of the activities in the ERPP, namely the District Environmental Management Officer (DEMO), to complete the environmental and social screening form (Annex D) to all proposed sub-projects in order to clarify if the sub-project can be approved for financing under the ERPP as well as to determine the scope of environmental assessment. Chapter 6 sets out the relevant process requirements for environmental and social management.

Natural Habitats (OP/BP 4.04)

The envisaged expansion of irrigation investments in the Kilombero Valley potentially threatens the availability of water for the ecosystem. Abstraction of water may reduce environmental flow in rivers and wetlands and negatively affect biodiversity. Multiple studies are evaluating water availability including Environmental Flow Assessment in the larger Rufiji River Basin, and the growing competition for water use. The River Basin Authority is being strengthened to better measure and manage this competition.

In the long run, application of large quantities of agro-chemicals in smallholder farming systems with limited environmental literacy may potently lead to development of pesticide resistant pest species, upsurge of traditionally minor pests, and potential elimination of useful fauna and flora species. Exposure to these substances can also affect human health through entry of chemical residues into the food chains creating food and environmental safety issues. Natural Habitats issues will be addressed as part of the environmental assessment.

Pest Management (OP/BP 4.09)

The Bank encourages the use of various means to assess pest management in the country and support Integrated Pest Management (IPM) and the safe use of agricultural pesticides: economic and sector work, sectoral or project-specific environmental assessments, participatory IPM assessments, and adjustment or investment projects and components aimed specifically at supporting the adoption and use of IPM. In World Bank-financed agriculture operations, pest populations are normally controlled through IPM approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest.

An IPMP is a comprehensive plan, developed when there are significant pest management issues such as: (a) new land-use development or changed cultivation practices in an area; (b) significant expansion into new areas; (c) diversification into new crops in agriculture; (d) intensification of existing low-technology systems; (e) proposed procurement of relatively hazardous pest control products or methods; or (f) specific environmental or health concerns (e.g. proximity of protected areas or important aquatic resources; worker safety). An IPMP is also developed when proposed financing of pest control products represents a large component of the project. A pest management plan reflects the policies set out in OP 4.09, Pest Management. The plan is designed to minimize potential adverse impacts on human health and the environment and to advance ecologically based IPM.

The ERPP will partially finance the purchase of agricultural inputs including seed (some treated with pesticide), chemical fertilizer and herbicide. Therefore, the provisions of OP 4.09 are being triggered so that best practice methodologies in this field become part of the implementation activities of the ERPP. Correspondingly, the GoT has prepared an Integrated Pest Management Plan (IPMP), which will be approved and disclosed along with this ESMF and the RPF prior to project appraisal.

The IPMP has the following objectives:

- To enhance capacity of the program beneficiaries (individual farmers) to use pesticides in an economic and safe way (ensuring that banned pesticides or

agrochemicals in WHO classes IA, IB and II will not be acquired by farmers), and introduce them to Integrated Pest Management (IPM) approach or concept for which technical capacity will be established in the program.

- Identify key strategic and institutional issues at the national and local government levels, in order to promote movement towards the development and implementation of a pest management policy.

The first component of the plan is the presentation of an initial reconnaissance to identify the main pest problems and their contexts (ecological, agricultural, public health, economic, and institutional) and to define a baseline. The second component specifies procedures for screening pest control products and then develops specific operational plans to address the pest problems identified. The IPMP also encompasses pest control product screening procedures.

Involuntary Resettlement (OP/BP 4.12)

This policy would be triggered when a program activity, for instance in this case a farmer groups irrigation sub-project, causes the involuntary taking of land and other assets resulting in: (a) relocation or loss of shelter, (b) loss of assets or access to assets, (c) loss of income sources or means of livelihood, whether or not the affected persons must move to another location.

The district, division, ward, village / shehia individual farmers and farmer groups as implementers of the ERPP will make every possible effort to avoid impacts on people, land, property, including people's access to natural and other economic resources, as far as possible. Most of the improvements in irrigated systems under the project involve rehabilitation of schemes and limited expansion of formal irrigated systems where inform irrigation had been previously practiced. The amount of resettlement executed is expected to be small and mostly limited to a few schemes with more significant expansion. Nonetheless, the implementation teams will need to carefully assess any loss or reallocation of property rights associated with the ERPP investments. OP 4.12 will be triggered in those cases.

OP 4.12, in most cases, is not triggered because people are being affected by physical displacement. It is triggered because the program activity causes land acquisition, whereby a physical piece of land is needed and people may be affected because they are cultivating on that land, they may have buildings on the land, they may be using the land for water and grazing of animals or they may otherwise access the land economically, spiritually or any other way which may not be possible during and after the sub project is implemented. Therefore, people are in most cases compensated for their loss (of land, property, livelihood or access) either in kind or in cash.

A Resettlement Policy Framework (RPF) originally prepared for ASDP has been updated in line with ERPP by the government and will be submitted to the Bank for approval in compliance with OP/BP 4.12. The RPF will set out guidelines for the preparation of Resettlement Action Plans (RAPs) if the need for any resettlement is found. The RAPs will be prepared by an external consultant and will have to be submitted to the District, Regional and Zonal offices for approval. The World Bank reserves the right to also approve any RAP as a condition for that particular project investment to be financed under the ERPP in both

Mainland and the islands of Zanzibar. Where there is a conflict between the Laws of Tanzania and the Bank OP4.12, the latter must take precedence if the Bank is to fund the ERPP.

A summary of the required actions for each of the safeguards policies triggered by the Project is provided in the table below (see Annex C for more details).

Table 4.3: Summary of Requirements of World Bank Safeguards Policies Triggered by the ERPP

Bank Safeguards Policy Triggered	Action Required by Triggered Policy	By Whom	Date action required by
OP 4.01 Environmental Assessment	Preparation of ESMF	GoT and RGZ	Approved by MAFC and MANR of the URT and the World Bank and disclosed in Tanzania and World Bank InfoShop prior to project appraisal.
OP 4.04 Natural Habitat	No specific document is required. Natural Habitats issues will be addressed as part of the sub-project PESIA/ESMP.	Sub-project implementing entity	Prior to sub-project approval.
OP 4.09 Pest Management	Preparation of IPMP	GoT and RGZ	Approved by MAFC and MANR of the URT and the World Bank and disclosed in Tanzania and World Bank InfoShop prior to project appraisal.
OP 4.12 Involuntary Resettlement	Preparation of RPF	GoT and RGZ	Approved by Ministry of Lands and Human Settlement and by the World Bank and disclosed in Tanzanian Mainland and Zanzibar and the World Bank InfoShop before project appraisal.

5. IMPACT EVALUATION OF THE PROJECT

The overall objective of the ERPP is to increase rice produced and marketed in the Morogoro Region of Tanzania Mainland and Zanzibar, leading to improved rural incomes and food security. However, the Project might also lead to some negative environmental and social impacts. This chapter describes such potential impacts and propose mitigation measures in order to eliminate or offset these impacts or to reduce them to acceptable levels.

5.1 Potential Environmental and Social Impacts

The two main sets of risks relate to the competitive demands for irrigation water, and to the possible environmental impacts of expanding use of agro-chemicals used in the irrigated farming systems. There is growing competition for limited water resources in the Morogoro region of mainland Tanzania. This Region encompasses or borders some of the uniquely diverse agro-ecologies in the world, including national parks, wildlife management areas and a Ramsar site. The expansion of irrigation investments potentially threatens the availability of water for wildlife and as well as for household use and hydroelectricity. The drying of rivers and wetlands reduces biodiversity. Multiple studies are evaluating water availability in the larger Rufiji River Basin, and the growing competition for water use. The River Basin Authority is being strengthened to better measure and manage this competition. On Zanzibar, the limited information available suggests the need to better manage what water resources are available. In either case, strong environmental assessments are required to assure the Project investments do not threaten degradation and to assure continuing protection of critical biodiversity.

The expanding use of agro-chemicals fostered by this project aims to improve the productivity of local rice production, but creates substantial risks to the wider environment. These include risks to neighboring wetlands resulting from agro-chemical run-off, risks of building resistances to pesticides, and risks to human health resulting from the mis-use of these pesticides, or improper storage and disposal.

The National Environment Policy (NEP) identifies the following as the critical environmental problems facing Tanzania today:

i) Land Degradation
ii) Lack of accessible, good quality water for both urban and rural inhabitants
iii) Environmental Pollution, e.g. Water Contamination, sewerage disposal, industrial spilage
iv) Loss of Biodiversity, Habitat and Wetlands
v) Deterioration of Aquatic Systems
vi) Deforestation
vii) Bush fire

Table 5.1 below lists the potential environmental and social impacts arising from the various types of ERPP sub-projects.

Table 5.1: ERPP Potential Environmental and Social Impacts and Risk Categorization

ERPP Type of Sub-Project	Potential Environmental and Social Impacts	Mitigation Measures	Likely Risk Category	Responsible Agency
Rehabilitation and expansion of irrigation schemes	• Water extraction in relation to permits and rights of downstream users; • Water pollution and water quality; • Involuntary resettlement or loss of /access to land/assets; • Waste management during construction; • Water borne diseases due to poor management of irrigation water • Agro-chemical usage in the scheme (see below)	• Confirm permits; monitor drainage in sensitive ecologies • Monitor inflow and outflow • Resettlement Action Plan (RAP) if necessary. Key provisions include: land-for-land compensation; compensation for structures and assets; and, a disturbance allowance • TOR for construction requires Waste Management Plan. Key provisions include: Control and daily cleaning at construction sites; provision of adequate waste disposal services. Proper disposal of chemicals and other hazardous materials; dust control by water, appropriate design and siting, restrict construction to certain times; and, appropriate and suitable storage of building materials on site. • Farmer training on management of irrigation water	**B – if expansion** **C- if only rehabilitation**	• MAFC/MANR-DPPR • MAFC/DoI • MAFC/MANR/MOL • MAFC/MANR • DITS, EMU and LGAs/DoI
Construction of warehouses	• Involuntary resettlement or loss of /access to land/assets; • Waste management during construction;	• Resettlement Action Plan (RAP) if necessary (see above) • TOR for construction requires Waste Management Plan (see	**B – if resettlement** **C- without resettlement**	• MAFC/MANR/MOL • MAFC/MANR
Rehabilitation of rural road	• Involuntary resettlement or loss of /access to land/assets; • Waste management during construction;	• Resettlement Action Plan (RAP) if necessary (see above) • TOR for construction requires Waste Management Plan (see above)	**B – if resettlement** **C- without resettlement**	• MAFC/MANR/MOL • MAFC/MANR
Agro-chemical usage				

Use of inorganic fertilizers and pesticides (herbicides, insecticides, fungicides, rodenticides)	• Water contamination with agro-chemical residues (fertilizer, residues) • Human health impacts if unsafe application/usage and handling (transportation, storage, disposal)	• Training of farmers in the safe use, handling and disposal of inorganic fertilizer and pesticides (esp. insecticide and herbicide) and Integrated Pest Management • Assist farmers to develop and/or implement Environmental and Social Management Plans (ESMP) for the schemes • Conduct refresher training for village level extension agents on IPM and safe use of agro chemicals • Monitor quality of water runoff from irrigation schemes • Establish monitoring and warning system for pest outbreak (for armyworm and edible grasshopper in Zanzibar)	**C**	• DITS, EMU and LGAs/DADO • SMS-Env. & DADO/ EMU, DITS, LGAs • DITS, EMU and LGAs/DADA • DITS, EMU and LGAs/DoI • DITS, EMU and LGAs

5.2 Potential Environmental Concerns for the ERPP

Land Degradation – Rain fed agriculture and livestock grazing are the most widespread land uses in Tanzania and these activities are potentially associated with serious and accelerating environmental degradation. Degradation in this sense means a diminution of the biological productivity expected of a given tract of land being used in a particular way. On a farm it may be reflected in lower crop yields, on a savannah in fewer livestock units and in a nature reserve in fewer plant and animal species. The soil on degraded lands is typically impoverished or eroded, there is less water available due to increased surface runoff or contamination, plant and animal productivity is lower, and wildlife less diverse.

Soil erosion impacts may include a dramatic increase in the frequency and intensity of floods and droughts, habitat damage related to sedimentation impacts downstream and disruption of natural ground water recharging. Degradation on arid, semi-arid and sub humid lands leads to desertification, as desert like conditions appear when none existed before.

There are relatively few hard data measuring the extent of degraded land in Tanzania, but the anecdotal evidence supporting accelerated deterioration in land productivity is compelling. The most significant causes are deforestation, cultivation of unsuitable marginal lands, inappropriate or excessive use of agricultural technologies and chemicals, over-grazing and poor management of cultivated land, often exacerbated by drought.

Soil erosion harms productivity by depositing silt in irrigation systems and river transport channels, and by damaging fisheries resulting in increased deficits in food production, declining food security, and an increase in poverty.

General Water Stress – In some areas, drought, a shortage of potable water, increased water demand for agricultural, energy and industrial purposes is leading to a critical water stress situation. Management of water rights issues among and between formal and informal users will continue to be particularly challenging if irrigation is significantly scaled up. Better management is required to reduce conflict between users, ensure water and riparian rights are respected and preserve ecosystems sustainability. Excessive water use for agriculture can result in loss of biodiversity or conversion from wetlands to agricultural land.

Point and Non-point Pollution of Water Sources can affect water quality which in turn affects aquatic life (leading to fish loss); affects human health due to water borne diseases; and loss of livelihood for those communities who depend on these basins. The main threats to basin wide water quality are insufficiently treated domestic, urban and industrial wastes and irrigation drainage water, and non-point source pollution from pesticide and fertilizer residues.

To achieve a wider and deeper understanding of these and with the ultimate goal of ensuring a more informed policy and planning decision-making process, the GoT through MAFC supported by the NEMC has undertaken a Strategic Environmental and Social Assessment (SESA) of the National Irrigation Master Plan in 2011.

Wetland Degradation – Agriculture (especially rice farming) is rapidly expanding in the most wetland areas of Tanzania. Dependence on soil moisture in the wetland soils for crop growing becomes an important element for food security and household income in the regions. But also, green pastures and water for livestock can only be obtained in wetlands during dry season. The quantity and diversity of various resources located in wetlands, including water resources, soil fertility and land itself, fish and forest products have been declining with time as a result of changing environment and over-use of resources due to increased human demand.

The Kilombero Valley Floodplain Ramsar Site in Morogoro where the ERPP Sub Projects are also going to be implemented is of global, national, regional and local importance in terms of its ecology and biodiversity. The valley supports high concentrations of large mammals, especially Puku antelope *Kobus vardoni* (with nearly 75% of the world population) and is a key feature in the Selous-Kilombero seasonal wildlife migrations.

Sustainable Wetland Management and maintenance of ecological balance in this wetland is essential and its utilization must be properly managed. Interventions are necessary to protect the Ramsar Site against degradation and pollution.

Climate change – The agricultural sector is highly vulnerable to climate change impacts in Tanzania. Higher temperatures can reduce yields of desirable crops. Rising temperatures can promote weed and pest proliferation. Greater variation in precipitation patterns increase the likelihood of short-run crop failures and long-run production declines. Although there will be gains in some crops in some regions of the country, the overall impacts of climate change on agriculture are expected to be negative, threatening food security.

Existing strategies including the National Climate Change Strategy aim most directly at climate adaptation, and focus largely on increasing adaptation to drought. Drought-resistant crops are perceived in policies as a principal means of addressing problems related to climate

variability and drought in particular. Promotion of such species should be integrated into national and district development policies, multi-sectoral policies, and sectoral policies in Tanzania.

5.3 Potential Social Concerns for the ERPP

Involuntary resettlement or loss of /access to land/assets: As a consequence of the project's support to undertake expansion of irrigation schemes, construction of warehouses, and rehabilitation of rural roads some local communities may be involuntary resettled or experience loss of access to land and/or natural resources. This can potential have significant adverse impacts on the livelihoods and economic situation of such local communities. This impact will be addressed through the RPF and the preparation of sub-project specific RAPs that includes the specific mitigation measures and compensation schemes to be implemented for sub-projects that triggers the World Bank's OP 4.12 Involuntary Resettlement.

Gender Issues: Women are often poorer than men, own less land and livestock, have fewer years of schooling and have the responsibility of sourcing and providing the household energy and growing the main subsistence crops (hence responsible for households food security).Therefore, women need an equal seat at the empowerment table. Gender imbalances are rooted and sustained by traditional and cultural values. A gender committee has been created to ensure that sectoral investments respond to the priority needs of both men and women. The new land legislation has represented an encouraging step towards securing the right of women to own, dispose of and inherit land.

Additionally, all stakeholders within the ERPP need to participate and take deliberate sensitization actions to encourage women participation in agriculture related education, training, programs and projects, planning, decision-making and, not least, policy implementation. Thus during the implementation of the ERPP, the following should be supported:

i. To promote gender equality within the participatory planning, implementation and operations of the project
ii. To facilitate education and training for women in all ERPP components and activities.
iii. To promote awareness on gender issues concerning men and women's social roles in the agriculture sector, including training on appropriate technologies.
iv. To promote awareness and advocacy on gender issues in the agriculture sector.

Inclusiveness: Exclusion of vulnerable groups from participating in and benefiting from program activities, i.e., from barriers to access due to stigmatization, harmful cultural practices, acute poverty among vulnerable groups, discrimination, lack of participation in the planning process etc.

Lack of access to social services and credit: Very limited and often too distant access to health care, schools, potable water, feeder roads, etc. Most smallholder farmers in the project area lack access to credit to expand their businesses.

The environmental and social screening form and checklist contained in the attached Annex C and F are specifically designed to ensure that adverse social impacts from ERPP activities are identified and captured in the planning stages and there-in effectively mitigated. Both environmental and social mitigation measures would be verifiable monitored during the project implementation.

6. ENVIRONMENTAL AND SOCIAL MANAGEMENT

This chapter discusses the institutional roles and responsibilities of environmental and social safeguards management during the project implementation and describes the steps involved in the environmental assessment process and procedure leading to the review and approval of sub-projects under ERPP.

6.1 Project Management Setup

The project will be implemented under the authority of the MAFC of the Tanzania Mainland and the MANR of Zanzibar, with full use of government systems for activity management, procurement, financial management, monitoring and evaluation. The details of these arrangements are provided in the Project Implementation Manual.

Tanzania Mainland

The day to day implementation of the project will be overseen by a designated task team composed of the following staff members:

i) a team leader with overall managerial responsibility for those components of the project implemented;

ii) a seed specialist with oversight responsibility for the work plans, budgets and implementation progress of subcomponent 1;

iii) an irrigation specialist with oversight responsibility for the work plans, budgets and implementation progress of sub-component 2.1;

iv) a crop management specialist with oversight responsibility for the work plans, budgets and implementation progress of sub-component 2.2; a marketing specialist with oversight responsibility for the work plans, budgets and implementation progress of component 3;

v) a monitoring and evaluation specialist responsible for quarterly and annual technical progress reports;

vi) a procurement specialist responsible for the efficiency and timeliness of project procurement;

vii) a financial management specialist responsible for tracking the project accounts and associated reporting; and

viii) a safeguards specialist responsible for ensuring that overall safeguards management monitoring and documentation is in line with the procedures described in this ESMF as well as the EMA.

The responsible departments will work closely with counterparts at regional and district level for the delivery of results. At the local level implementation will be under the District Agriculture Irrigation and Cooperative Officer (DAICO), who falls under the supervision of the District Executive Director (DED). This officer will be backed by the Zonal Irrigation and Technical Support Units (ZITUS) in scheme design, supervising rehabilitation works,

and training of Irrigator Organizations (IO). At the village/scheme level, implementation of the day to day activities of will be the responsibility of Irrigator Organizations (IO) and local extension staff, backed by professional managers hired in conjunction with the BRN initiative.

Zanzibar

Implementation of the project on Zanzibar will be similarly overseen by a designated task team composed of the following staff members:

i) a team leader with overall managerial responsibility for those components of the project implemented on the islands;

ii) a seed specialist with oversight responsibility for the work plans, budgets and implementation progress of subcomponent 1;

iii) an irrigation specialist with oversight responsibility for the work plans, budgets and implementation progress of sub-component 2.1;

iv) a crop management specialist with oversight responsibility for the work plans, budgets and implementation progress of sub-component 2.2;

v) a monitoring and evaluation specialist responsible for quarterly and annual technical progress reports;

vi) a procurement specialist responsible for the efficiency and timeliness of project procurement;

vii) a financial management specialist responsible for tracking the project accounts and associated reporting; and

viii) a safeguards specialist responsible for ensuring that overall safeguards management, monitoring and documentation is in line with the procedures described in this ESMF as well as the EMA and the SMA/environmental management for sustainable development Act No. 2 0f 1996.

During the first three years of implementation, this team will be backed by a temporary set of technical consultants hired to provide early guidance in project management, and build government staff capabilities. These include a financial management specialist, a procurement specialist, a monitoring and evaluation specialist, and safeguards specialist.

At the local level, project implementation will be guided by Local Government Authorities (LGA) working through the District Agricultural Offices. Each district will be responsible for procurement, contract administration, supervision of project activities, and reporting on progress for sites under its jurisdiction.

The Project is aligned to the Sector Wide Approach (SWAp) in the agriculture sector created under the auspices of the initial phase of the ASDP. Correspondingly, the Project will use the ASDP Steering Committee (SC) for management and budgetary oversight.

Implementation in Zanzibar will be similarly let by a designated coordinator, backed by an identified team of seed, irrigation and crop management specialists all seconded to the

project by the MANR. Ministry procurement, financial management and monitoring and evaluation systems will be used, with support from supplementary technical assistance as required. There will not be devolution of management responsibility to the district level.

Zanzibar will have its own project Steering Committee congruent with the planning systems for the agricultural sector as a whole. As is the case in the mainland, the Steering Committee in Zanzibar will be tasked with providing the implementation team with technical guidance and approving annual budgets and work plans.

Overall project oversight will be managed by the Director for Policy and Planning (DPP) of the MAFC. This office will be responsible for assuring the coordinated delivery of financial and technical progress reports for both the Mainland and Zanzibar. In complement, the Project will have a Special Joint Steering Committee (SJSC) bringing together the Permanent Secretaries of MAFC and PMO-RALG in Mainland, and MANR and President's Office (Regional Administration) for Zanzibar. The JSC will meet once a year to review lessons derived from project implementation, and advise on any significant changes in budgets or implementation plans.

6.2 Roles and responsibilities in the ERPP

The main institutions with key responsibilities for environmental and social management are:

6.2.1 Tanzania Mainland

The National Environment Management Council (NEMC)

The NEMC is responsible for ensuring that all development projects in Tanzania comply with all relevant environmental laws. The new law, the Environment Management Act, 2004, specifically states that NEMC's role, among many other others is to review and recommend for approval/clear PESIAs. Therefore, the overall role of the NEMC will be to review PESIAs for all ERPP activities. Specifically NEMC will:

i) Review project registration forms and the project brief in order to undertake project screening;
ii) Review and approve the TOR for the preparation of the PESIA;
iii) Provide relevant information on policies and other administrative requirements;
iv) Review PESIA/AUDIT reports; and
v) Periodic oversight monitoring of the project performance in terms of environmental compliances.

MAFC - Environment Management Unit (EMU)

The Environment Management Unit of MAFC was established in 2008 following the enactment of EMA (EMA, 2004) and its regulations of 2005. Currently EMU has 11 experts to execute environmental and social safeguards in the agriculture crop subsector. EMU collaborates with other line ministries to address the same issues sector wise. The unit is responsible for the National, Zonal, and District activities of ERPP to comply with the Tanzania's environmental laws and requirements, and the World Bank's Operational Policies. Specifically, the Environment Management Unit of the MAFC will perform the following:

i) Ensure that the project complies with the requirements of this ESMF;
ii) Supervise preparation of project brief and PESIA registration forms;
iii) Supervise and coordinate preparation of the scoping report and preparation of the Terms of Reference for PESIA/AUDIT by environmental/audit experts;
iv) Monitoring and follow up on the implementation of the project environmental and social mitigation measures;
v) Collaborate with LGAs to train participating farmers on proper use of fertilizer and agro chemicals; and
vi) Collaborate with LGAs to train farmers on proper disposal of used pesticide cans and bags.

District Environmental Coordinator (DEC)

The districts will play a leading role in the environmental management process of sub-projects. Specifically the DEC will carry out the following tasks:

i) Oversee the preparation of TOR for PESIA and PMP if applicable;
ii) Supervise the public consultation process for PESIAs;
iii) Review and approve sub-projects environmental and social management plan (ESMP);
iv) Ensuring that mitigation measures in the sub-projects ESMP contained in the cleared project design package is being sufficiently implemented.

District Environmental Management Officer (DEMO)/Department of Irrigation and Technical Services (DITS)

The DEMO/DITS will be responsible for complying with all national laws regarding the environment and with all social/poverty guidelines, parameters and targets set by the GoT, and of all triggered World Bank Safeguards policies. Specifically the LGAs will perform the following:

i) Complete and submit the Environmental and Social Screening Form;
ii) Implement sub- project activities according to and consistent with the provisions of this ESMF and the mitigation measures included in the ESMP;
iii) Ensure that these mitigation measures are complied with during construction and post construction (i.e. operations) stages of their activities, by self monitoring of their activities and by periodically reporting to MAFC and ERPP Task Team Leader;
iv) Maintain an adequate budget to implement the appropriate mitigation measures identified in the PESIA and/or ESMP;
v) In collaboration with NEMC coordinate PEIA process at district level;
vi) Be the focal entity for integrating environmental safeguards in the project activities;
vii) Ensure that safeguards in the project activities are adequately integrated in progress reports of the project implementation;
viii) Collaborate with MAFC/Environment Management Unit to;
    - Train participating farmers on environmental and social management challenges; and
    - Train participating farmers on irrigation water management so as to minimize incidence water borne diseases
ix) Facilitate resolving any conflict in the community that may arise in the course of implementation of the ESMP.

Farmers/Irrigators Organization

i) Oversee water management within the irrigated area;
ii) Collaborate with other water users associations in the protection of water catchment areas;
iii) Ensure irrigation committee perform its work effectively;
iv) Adhere to the comprehensive guidelines on irrigation operation and maintenance;
v) Adhere to proper use of fertilizers and other agro chemical; and
vi) Implement the irrigation scheme Environmental Management Plan.

6.2.2 Zanzibar

Ministry of Agriculture and Natural Resources (MANR)

The Ministry of Agriculture and Natural Resources is responsible to ensure social and environment management are adhered to during the implementation of ERPPactivities. In this context, its institutions (i) Zanzibar Agricultural Institute Research (ZARI) will collaborate with District Authorities and Extension staff to train participating farmers on proper use of fertilizer and agro chemicals so that in the course of use do not harm farmers and environment; (ii) Department of Irrigation is responsible in training farmers on water borne diseases associated with irrigation water use and (iii) Plant Protection Division (PPD) will collaborate with Distinct Authorities and Extension staff to train farmers on proper disposal of used pesticide cans and bags, and train participating farmers on environmental and social safeguard issues and mitigation measures.

Local Government Authorities (i.e. District)

The LGA policy recognizes essential linkages between the local communities and environmental protection to ensure sustainable use in the exploitation of natural resources. It recognises the roles and mandate of local authority and communities on protection and conservation of environment and natural resources; and recognition of the establishment of community groups that will be engaged in environmental management programmes such as waste management and environmental education.

The Environment Management for Sustainable Development Act No. 2 of 1996 section 106 (2), gives District Environmental Officers an authority to enforce legislation related to the environment. Likewise, Agricultural Development Officers (DADO) with their counterparts (i.e. subject matter specialists – forestry, Fisheries and cooperative) have the role to enforce implementation of environmental legislation while supporting and or implementing strategic plans from their sectors including related project implemented in their districts. The DADOs and their counterparts in the course of implementing ERPP sub projects will:

(i) Complying with all national laws regarding the environment and with all social/poverty guidelines, parameters and targets set by the GoZ and of all triggered World Bank Safeguards policies,

(ii) to implement their sectoral sub project activities according to and consistent with the provisions of this ESMF,

(iii) implementing, inter-alia, all appropriate mitigation measures identified in their

completed ESIA and/or environmental and social management plan (ESMF),

(iv) to ensure that these mitigation measures are complied with during construction and post construction (i.e. operations) stages of their activities, by self-monitoring of their activities and by periodically reporting to their respective Regional Agriculture Development Officer or respective project leader,

(v) to ensure relevant mitigation measures identified in the ESIA and/or environmental and social management plan (ESMP) are implemented and sustained in their operation, and

(vi) to comply with any directives that may be issued from time to time from the DoE, ERPP , MANR, PSC and Regional authorities.

District Level Authorities

Based on ERPP implementation framework, District Agricultural Development Officers (DADOs) have greater role to play to ensure ERPP activities are well coordinated and implemented accordingly at district level. This office acts as a link between National, District and Shehia level authorities. They will implement the project activities under the leadership of ERPP facilitation team. The DADOs with their supporting team Subject Matter Specialists (SMS) – environment, forestry, cooperative and lands will be responsible for:

i) Complete and submit the Environmental and Social Screening Form;
ii) Collaborate in PESIA process at district and field levels;
iii) Provide necessary information of the agricultural related district profile needed for the PESIA process;
iv) Supervise implementation of ESMPs and PMPs including regular site visits;
v) Train participating farmers on environmental and social management challenges;
vi) Train participating farmers on irrigation water management so as to minimize incidence water borne diseases; and
vii) Facilitate resolving any conflict in the community that may arise in the course of project implementation.

Shehia Level Governments

The project will be implemented at the ongoing and planned irrigation schemes which are located at the rural areas where some Shehias have formulated community forestry management agreement (CoFMA) with the Central Government. For those Shehias with CoFMA Shehia governments through their Councils are responsible in enforcing environment management by-laws using Shehia Conservation Committees in order to enhance sustainable management of natural resources and rural environment. For those Shehias with no environmental management plans, the Shehia governments are responsible to ensure the Shehia and or scheme has environmental management plan. At the Shehia level, there will be also farmers and or water user's organizations. The farmers and water user organizations under the leadership of Shehia government and DADOs would have the following responsibilities:

i) Protect water catchment areas,
ii) Ensure irrigation committee perform its work effectively,
iii) Adhere to the guidelines of environmental and social safeguard issues,
iv) Adhere to proper use of fertilizers and other agro chemical,
v) Follow mitigation measures advises

6.3 Capacity Building

In order to ensure successful safeguards management of ERPP sub-projects and implementation of the ESMF training will be provided to key project stakeholders. In the initial stage of project implementation two safeguards management start-up workshops (one in Mainland Tanzania and one in Zanzibar) for all implementing agencies will be held to discuss and confirm ERPP safeguards procedures, environmental and social management and monitoring arrangements as well as the ESMF work plan. Moreover, training will be given to farmers in targeted project areas on environmental and social management challenges as well as on irrigation water management so as to minimize incidence water borne diseases (schistosomiasis, malaria, dysentery, etc.). The training program is to be implemented by the MAFC and MANR in collaboration with National Environment Management Council and Department of Environment in Zanzibar. Additional training activities related to pest management are included separately in the IPMP work plan.

It is proposed that the training program will be implemented four times a year, at least once in each quarter in each participating Region over the first two years of the project cycle. The budget for this activity will be as per safeguards budget in the PAD with supplementary budget (token) from the MAFC-Medium Term Expenditure Framework.

EMU will link its synergies with other ongoing and planned programs/projects such as Southern Agricultural Growth Corridor of Tanzania (SAGCOT), the Third Tanzania Social Action Fund (TASAF) and Feed the Future (FtF) at the District level and will harmonize with the similar training programs at district and village levels to support implementation of ERPP.

6.4 Environmental and Social Assessment Process

The following section sets out the environmental and social assessment and approval process to be applied on all sub-projects financed under the ERPP. The process complies with both the World Bank's Safeguard Policies and Tanzanian EIA regulations and related guidelines.

This process involves the following four steps:

1. Completion of Environmental and Social Screening Form
2. Preparation of Environmental and Social Requirements
3. Sub-Project Appraisal and Approval
4. Monitoring and Evaluation

Step 1 – Completion of Environmental and Social Screening Form

The aim of the screening process is to: i) assess whether sub-projects are likely to have potential negative environmental and social impacts; ii) determine the proposed sub-project's environmental and social risk level (category); and iii) determine appropriate extent and type of environmental and social assessment required by the national legislation and World Bank Safeguards Policies (including preparation of a Resettlement Action Plan and Pest Management Plan, if applicable).

Environmental and social screening for potential sub-project to be financed under the ERPP will be done by completing the Environmental and Social Screening Form (ESSF) (Annex D). Based on a visit to the proposed project site and consultation with relevant stakeholders the DEMO/SMS Environment will complete the ESSF and submit it to the MAFC – Environmental Management Unit (EMU)/MANR/DoE for review, comments and approval. The safeguard focal point for the ERPP in the MAFC-EMU/MANR must keep a copy of the approved ESSF for each sub-project.

The completed ESSF would provide information, which is the basis for classification of projects under categories B or C depending on the nature, type, scale, location, sensitivity and magnitude of the potential environmental impact of the sub project. No category A sub-projects will be financed under the ERPP. Table 5.1 lists the types of sub-projects to be financed under ERPP including risk categorization. The environmental and social work required for category B and C sub-project is as follows:

- *Category B - **Moderate** environmental and social risk*
  Project is likely to have some adverse environmental and social impacts but less than those of category A. Those impacts are site specific and few if any are irreversible and can be mitigated and managed through the implementation of a set of mitigation measures as set included in the ESMP. Under this category the preparation of a Preliminary Environmental and Social Impact Assessment is required (PESIA) (Annex G)

- *Category C – **Low** environmental and social risk*
  Projects is likely to have minimal or no significant adverse environmental and social impacts. Under this category the preparation of an Environmental and Social Management Plan (ESMP) is required (Annex E)

Step 2 – Preparation of Environmental and Social Requirements

Once the ESSF has been approved the DEMO/MANR should initiate the required environmental and social work (PESIA, ESMP) and RAP, PMP if applicable. The preparation of the PESIA should be done by an individual consultant and ToR must be reviewed and approved by NEMC/DoE. The preparation of ESMPs for Category C sub-projects should be done by the DEMO and the final ESMP should be approved by the DEC/DoE. The DEMO/DPPR will also oversee the preparation of the PESIA (and RAP, PMP if applicable).

Public Consultation: According to the Tanzanian Law and World Bank OP4.01, public consultation is required as part of PESIA and/or ESMP preparation process. Public consultations should be held with the local communities and all other interested and affected parties during the screening process. These consultations should identify key issues and determine how concerns will be addressed. To facilitate meaningful consultations, the Village/Shehia Council will provide all relevant materials and information concerning the sub-projects in a timely manner prior to the consultation, in a form and language that are understandable and accessible to the groups being consulted.

Environmental and Social Management Plan (ESMP): The sub-project ESMP must

include a set of mitigation, monitoring and institutional measures to be undertaken during implementation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The ESMP is a sub-project specific plan, which must include the actions needed to implement these measures, including the following features:

Mitigation: Based on the environmental and social impacts identified through the screening process and PESIA for category B sub-projects, the ESMP should describe the technical details of each mitigation measure, together with designs, equipment descriptions and operating procedures as appropriate.

Monitoring: The ESMP should include a monitoring section that will be linked to the mitigation measures. Specifically, that monitoring section of the ESMP should provide a specific description and technical details of the monitoring method, including the indicators to be measured, how they will be measured and by whom, the sampling locations, the frequency of measurements, detection limits (where appropriate), and the definition of thresholds that will signal the need for corrective actions, e.g. the need for on-site construction supervision, or the need to test and have a water quality monitoring plan.

The ESMP should also provide a specific description of institutional arrangements for the sub project, (i.e. who is responsible for implementing the mitigation measures and carrying out the monitoring regime for operations, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting and staff training.)

Additionally, the ESMP should include an estimate of the costs of the measures and activities recommended so that the district or the farmer group can budget the necessary funds. Similar to the process for planning of sub-projects, the mitigation and monitoring measures recommended in the ESMP should be developed in consultation with all the affected groups to include their concerns and views in the design of the ESMP. The final and approved ESMP should be included as part of the cleared project design package (see Annex C for content of an ESMP).

Costs associated with the preparation of PESIA and implementation of the ESMP will be covered under the ERPP sub-project budget. The expenses associated with review and approval of sub-projects environmental and social required work would be made up of the cost of service providers/technical assistance/allowances of staff etc. to support the efforts of the district and/or the farmer group. An allowance for these costs is included and budgeted, in the overall ERPP budget.

Step 3 – Sub-Project Appraisal and Approval

After completion of the required environmental and social work the final reports and/or ESMPs should be submitted for final approval.

- Category B sub-projects: The final PESIA must be submitted to NEMC/World Bank for approval
- Category C sub-projects: The final ESMP must be submitted to the DEC/DoE for approval

Pest Management: If the sub-project intends to introduce or expand the use of pesticides or

other agrochemicals, the preparation of a Pest Management Plan is required (as determined by the screening process). The PMP will include instructions for the handling, use, disposal of chemicals, and provisions to supply necessary safety equipment and training for their use, which will be reviewed and approved by the MAFC-EMU/MANR. The separate IPMP document prepared along with this ESMF includes more details on this.

Involuntary Resettlement: If the sub-project causes the involuntary taking of land and other assets resulting in: (a) relocation or loss of shelter, (b) loss of assets or access to assets, or (c) loss of income sources or means of livelihood, whether or not the affected persons must move to another location the preparation of an Resettlement Action Plan (RAP) is required. The final RAP required the World Bank's 'No Objection'. The separate Resettlement Policy Framework document prepared along with this ESMF includes more details on this.

Step 4 – Monitoring and Evaluation

The monitoring and evaluation plan described here is for the entire ERPP at the national level. The objective for monitoring and evaluation plan is twofold:

i) to provide continuous and timely information to project staff at national and district level about the success or challenges arising with the implementation of the Environmental and Social Management process outlined in this ESMF;

ii) to evaluate the performance of the ESMF by determining whether the mitigation measures designed into the ERPP sub-project activities have been successful in such a way that the pre-project environmental and social conditions have been restored or improved and environmental risks have been mitigated.

Monitoring and Evaluation Indicators

The following are some pertinent parameters and verifiable indicators to be used to measure the ESMF process, mitigation plans and performance;

a) ESMF Procedures

- Proportion of irrigation, road and warehouse sub-projects requiring with completed ESSFs
- Proportion of irrigation, road and warehouse sub-projects with acceptable PESIA approved
- Proportion of irrigation, road and warehouse sub-projects with acceptable ESMP approved
- Proportion of irrigation, road and warehouse sub-projects requiring a RAP that have this completed
- Proportion of irrigation, road and warehouse sub-projects requiring a PMP that have this completed.

b) Project Component Implementation

- Number of farmers who have received training on the safe use of agro-chemicals
- Proportion of drinking water access points downstream of the ERPP supported

irrigation schemes with unacceptable levels of agro-chemical contamination;

- Proportion of farmers with good knowledge of the safe use, handling and disposal of agro-chemicals one year after receiving training.

6.5 Monitoring Roles and Responsibilities

LGA – (DEMO/SMS-Environment/DADO*)*

It is planned that the environmental and social impacts and their designed mitigation measures are to be monitored throughout the implementation of ERPP sub-projects . The DEMO in Mainland Tanzania and the SMS-Environment/District Agricultural Development Officer (DADO) in Zanzibar will be responsible for the day-to-day supervision and monitoring of sub-project safeguards management and implementation of mitigation measures as included in the approved ESMP. The LGA will monitor and evaluate sub-project environmental and social impacts and the mitigation measures regularly (including monitoring of water quality in sub-project areas) and will maintain suitable records to be made available to their respective LGA/MANR through the submission of biannual safeguards monitoring reports.

The LGA will make regular visits to project sites (with highest priority given to category B sub-projects) in order to inspect and verify for themselves the nature and extent of the impacts and the level of implementation of the ESMP. The LGAs will prepare consolidated biannual safeguards monitoring reports for submission to the MAFC-EMU/MANR. The LGAs will need equipment and transportation to carry out their task effectively and this will be provided by the ERPP and is included in the work plans and budgets in section 6.6 below.

The LGA will monitor the impacts and mitigation measures during project execution, i.e. from planning stage to construction, operations and maintenance stages. The LGA will also be responsible for monitoring the environmental and social impacts and mitigation measures resulting from the action of their contractors, sub-contractors, transporters, suppliers and all other third parties in the course of their duties. Further, the LGA will also be responsible for monitoring the environmental and social impacts and mitigation measures of the sub-project activities at other locations beyond the sub project sites, at end user locations such as in rights of way, servitudes etc. and on nearby wetlands, game parks etc. Therefore, wherever environmental and social impacts are or can be attributed to the sub-project activities the appropriate mitigation measures must be included in the approved ESMP for the sub-project and the LGA would be responsible for monitoring and evaluating the implementation of this ESMP.

MAFC-Environmental Management Unit (EMU)/MANR

MAFC-EMU/MANR in collaboration with the Department of Irrigation and Technical Services (DITS) and the Director of Planning, Policy and Research (DPPR) must ensure that sub-projects comply with the requirements of this ESMF as well as to monitor and follow up on the implementation of the mitigation measures as included in the sub-project ESMP. The MAFC-EMU/MANR will conduct regular supervision and monitoring site visits to sub-project with the highest environmental and social risks in order to assess the implementation of the ESMF procedures and national legislations. By compiling biannual safeguards

monitoring reports from the districts the MAFC-EMU/MANR will prepare the required safeguard section of the annual technical progress report for ERPP. The consolidated safeguard report must include progress made on the parameters and indicators specified above as well as to highlight specific environmental and social safeguards issues arising from sub-project implementations, which must be reported to the ERPP NSC and LGCDG SC. The safeguard focal points in MAFC and MAFR should ensure that an assessment of the safeguards performance indicators mentioned above is included in the baseline, mid-term and end of project impact surveys. Moreover, MAFC-EMU/MANR should confirm water permits for irrigation schemes.
The Department of Irrigation in Zanzibar will also be responsible for monitoring of drainage in sensitive ecologies as well as assessing quality of water runoff from irrigation schemes.

The National Environment Management Council (NEMC)/Department of Environment (DoE)
NEMC/DoE, in collaboration with MAFC/MAFR will be responsible for reviewing the PESIA report for Category B sub-projects and the ESMP for Category C sub-projects and will also visit category B sub-project sites during construction to ensure construction activities are going on as per ESMP. Moreover, the NEM/DOE will be responsible for conducting ESMF environmental and social audits for selected ERPP sub-projects. The audit is a systematic and objective assessment of the environmental and social impacts of the sub-project and based upon the principles of the ESMF and the RPF, the audit identifies areas of concern, and proposes appropriate measures for their mitigation, estimates the cost of the measures, and recommends responsibilities and a schedule for implementing them.

The ERPP National Steering Committee and Local Government Capital Development Grant Steering Committee (ERPP NSC and LGCDG SC): The NCS and SC will monitor environmental and social management performance by reviewing the consolidated bi-annual safeguards monitoring reports and mid-term review report's safeguard performance indicators.

6.6 ESMF Work Plans and Budgets

Table 6.1: Tanzania Mainland Work Plan

OUTPUT/ACTIVITY	TIMEFRAME					RESPONSIBLE	COST ESTIMATES (USD)
	YR 1	YR 2	YR 3	YR 4	YR 5		
Output 1. ERPP Safeguards Management Start-up Workshop							
Activity 1.1: Conduct one workshop in Morogoro with all implementing agencies in Mainland to discuss and confirm ERPP safeguards procedures, environmental/social management and monitoring arrangements as well as ESMF work plan						EMU, DITS, LGAs	7,000
Sub- Total for Output 1							**7,000**
Output 2: Implementation of environmental safeguards in ERPP sub projects							
Activity 2.1: Environmental and social screening of ERPP sub-projects						EMU, DITS, LGAs	6,000
Activity 2.2: Draft TOR for PESIA, RAP, PMP as needed for ERPP sub-projects						DITS, EMU and LGAs	2,000
Activity 2.3: Preparation of PESIA, ESMP, RAP, PMP as needed for ERPP subprojects						DITS, EMU and LGAs	30,000
Activity 2.4: Public consultations for PESIAs						DITS, EMU and LGAs	5,000
Activity 2.5: Review of PESIA, ESMP, RAP and PMP						NEMC, DITS, EMU, LGAs	8,000
Sub- Total for Output 2							**51,000**
Output 3: Backstop implementation of PESIA, ESMP, RAP work plans (NB. PMP work plans treated separately in IPMP work plan and budget)							
Activity 3.1: Training of farmers in targeted project areas on environmental and social management challenges and ESMP expectations.						PHS, EMU, DITS and LGAs	10,000
Activity 3.2: Training to farmers on irrigation water management so as to minimize incidence water borne diseases (schistosomiasis, malaria, dysentry, etc.)						DITS, EMU and LGAs	20,000
Sub- Total for Output 3							**30,000**
Output 4: Monitoring and Evaluation of ESMF implementation at National, District and Local level							
Activity 4.1: Conduct regular monitoring and evaluation visits on implementation of ESMF in the ERPP sub-projects						MAFC, LGAs	10,000
Activity 4.2: Monitoring of water quality in ERPP sub-projects areas						LGAs	5,000
Activity 4.3: Conduct environmental and social auditing of selected ERPP sub-projects						MAFC, NEMC	10,000
Activity 4.4: Incorporation of safeguards review in project impact surveys						MAFC	In impact survey budgets
Sub- Total for Output 4							**25,000**
GRAND TOTAL							**113,000**

Table 6.2: Zanzibar Work Plan

Activity	Responsible	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
ERPP Safeguards Management Start-up Workshop																					
Conduct one workshops in Zanzibar with all implementing agencies to discuss and confirm ERPP safeguards procedures, environmental / social management and monitoring arrangements as well as ESMF work plan	MANR																				
Environmental and Social Management Process																					
Step 1: Completion of Environmental and Social Screening Form																					
Complete and submit ESSFs including visit to proposed project site	SMS-Env.																				
Review and approve ESSFs	MANR reviews /DoE approves																				
Step 2: Preparation of Environmental and Social Requirements																					
Prepare PESIA TOR	MANR																				
Prepare RAP TOR	MANR																				
Prepare PMP TOR	MANR																				
Review and approve PESIA TOR	DoE																				
Oversee the preparation of the PESIA/RAP/PMP	DPPR																				
Public consultation for PESIA/RAP/PMP	DEC																				
Step 3: Sub-project Appraisal and Approval																					
Review and approve ESMPs/PESIAs	DoE																				
Review and approve PMPs	MANR–Plant Protection																				
Review and approve the RAP	MoL																				
Step 4: Monitoring and Evaluation																					
Supervise implementation of ESMPs and PMPs including regular site visits	SMS-Env. & DADO																				
Conduct regular site visits to monitor implementation of ESMP/PMP	SMS-Env. & DADO																				
Supervise implementation of RAPs	MoL																				
Prepare and submit biannual safeguards monitoring reports	MANR-DPPR																				
Prepare safeguard section in the annual technical progress report	MANR-DPPR																				
Participate in GOT/World Bank Implementation Support Missions	MANR-DPPR																				
Conduct environmental and social auditing of selected ERPP sub-projects	MANR/DoE																				
Additional Mitigation Measures – *in addition to those outlined in the IPMP and RPF*																					
Provide input to TOR and monitor environmental impacts of construction of irrigation schemes	DoE																				
Confirm water permits for irrigation schemes	MANR-DPPR																				
Monitor drainage in sensitive ecologies and inflow/outflow	DoI																				
Monitor quality of water runoff from irrigation schemes	DoI																				
Training of farmers in targeted project areas on environmental and social management challenges and ESMP expectations.	MANR/DoE																				
Training to farmers on irrigation water management so as to minimize incidence water borne diseases (schistosomiasis,malaria,dysentry)	MANR/DoE																				

Table 6.3: ERPP ESMF Implementation Budget (Zanzibar)

Activity	**Amount (US$)**
ERPP Safeguards Management Start-up Workshops	7,000
Environmental and Social Management Process	40,000
Mitigation Measures	50,000
Grand Total	**97,000**

Annex A: Bibliography

- Morogoro Regional Office (2006)
- National Census (2012)
- URT, (2004), Environmental Management Act No. 20: Government Printers; Dar es Salaam Tanzania
- Household Budget Survey (2009/10)
- OCGS,2012. National Sample Census of Agriculture 2007/2008. Volume VII: Crop Sector -Zanzibar Report
- The Zanzibar Cash Crops Farming System Project (1995). Farming System Research report
- Socio – Economic Survey 2013; Statistical Report- Preliminary Results Office of the Chief Government Statistician Zanzibar
- Wood Biomass Survey
- Zanzibar Agricultural Transformation Initiatives for sustainable Agriculture (2010)

Annex B: Consultations

1. Names of experts preparing the ESMF

S/n	Name	Title	Organization
1	Mary Majule	Principal Agriculture Officer	Ministry of Agriculture Food Security and Cooperatives, Environment Management Unit majulemary@yahoo.com
2	John Banga	Agriculture Officer	Ministry of Agriculture Food Security and Cooperatives, Environment Management Unit

2. Names of people consulted during the preparation of the ERPP ESMF

S/n	Name	Title	Organization
1	Margaret Ndaba	Team Leader	Ministry of Agriculture Food Security and cooperatives, Department of Policy and Planning
2	Shakwaanande Natai	Head - Environment Management Unit	Ministry of Agriculture Food Security and cooperatives,
3	Victoria Kisamfu	Principal Agriculture Officer	Ministry of Agriculture Food Security and Cooperatives, Environment Management Unit
4	Lait Simkanga		Ministry of Agriculture Food Security and cooperatives, Department of Irrigation and Technical Services
5	Ronald Komanga		Ministry of Agriculture Food Security and cooperatives, Department of Irrigation and Technical Services
6	Nassor Mkarafuu		MANR – Zanzibar
7	Tamrin Said		MANR – Zanzibar
8	Mary Majule	Principal Agriculture Officer	Ministry of Agriculture Food Security and Cooperatives, Environment Management Unit majulemary@yahoo.com
9	John Banga	Agriculture Officer	Ministry of Agriculture Food Security and Cooperatives, Environment Management Unit

3. Consultations at district and village level

Date	Location	Persons	Issues Arising
23-25 April 2013	Zanzibar, Unguja and Pemba	Affan Mallim, Permanent Secretary, Baliam Assad, Deputy Permanent Secretary, Mbenik Rashid, Director of Agriculture, Othman Maulid, Chief Extension Officer; Rashid Said, Chief Irrigation Officer; Sheha Hamdan, Director of Forestry; Manyam Abdulla, Director of Policy and Planning, Mansura Kassim, Director of Food Security; Mchenga Machena, Chief irrigation Officer and visits to meet with village officials in a cross-section of irrigation schemes including Mtwangio, Loani, Banda Majo, Machigini, Dobi 1, Dobi 2 Kibondo Mzungo and Ole	Discussion of the GAFSP proposal and planned project including review of the origins of the proposed irrigation schemes, current challenges in water management and rice production. It was noted that most of the schemes are very small and are seeking interlinked rehabilitation with advisory assistance on crop management. Potential environmental and social impacts include groundwater contamination; rising value of farmland and the need for transparent management systems especially for payments for water and irrigation scheme maintenance. Agro-chemical use is very limited with almost no use of herbicides or insecticides. Many use fertilizer if this is obtained through the input subsidy programme. There is limited baseline data on existing adoption rates and management practices. Farmers were generally enthusiastic to receive the project and seemed well organized in each of the schemes. Extension support is evident, though limited in breadth. There is need to continue to strengthen the irrigator associations to encourage productivity growth and experimentation with new technology and not simply the maintenance of irrigation infrastructure. Training will be needed in the safe use of agro-chemicals. Possible agro-chemical contamination of ground water should be monitored. A key institutional challenge is the limited number and training of national agricultural extension staff. These monitor environmental issues and probably need additional training to do so.
28 April to 1 May 2013	Morogoro District	L.G. Noah, Acting Regional Administrative Secretary; Firmin Mizambwa, Chief Executive Officer, Agricultural Seed Agency; Henry Mahoo, Associate Professor, Sokoine University of Agriculture; Imani Nzobo, Irrigation Engineer and visits to a corsssection of irrigation	Discussions of the GAFSP proposal and the plan for the Expanding Rice production project including a review of the irrigation schemes targeted for assistance, current challenges in crop management, water management, rice production and rice marketing. The schemes vary considerably in size and sophistication. Water rights are evolving from a single right per year to separate rights for the rainy and dry season, though these are not consistently enforced. Many farmers seem to apply chemical fertilizer, but few

		schemes including Mvumi, Kalangali, Msolwa Ujamaa and	apply herbicide or insecticides. Additional training is needed in safe application, storage and disposal of agro-chemicals. This needs to be linked with monitoring of groundwater for possible contamination. There are no detailed adoption data on the use of improved farming technologies. There is need in many schemes for more transparent and clearly agreed arrangements for scheme maintenance. There is evidence of conflict between arable farmers and pastoralists in the broader Morogoro Region, though no evidence of direct conflict in the irrigation schemes under consideration. Resettlement has not been an issue in the past as village or irrigator associations seem to be transparent and work on consensus, but this will need to be confirmed in further discussions. There is little knowledge of the proposed Big Results Now interventions. The key challenges appear to be inadequate irrigation scheme management to assure sustaining these investments in good condition and the lack of training in the safe use of agro-chemicals. There is interest in integrated pest management and some evidence of successful application of the technologies underlying System of Rice Intensification on a small-scale. These will need to be monitored closely to confirm what is most acceptable to farmers. Women and men seem to have equitable access to irrigation plots. Though again, this issue is worth further monitoring. There are district environmental officers, though complaints that they lack adequate resources to cover their mandates.
14-16 November 2013	Kilombero District	District Executive Director; District agriculture and irrigation officials, village officials in Njage and Msolwa Ujamaa	Discussion of project plans for irrigation rehabilitation and expansion, agronomic interventions, possible resettlement issues; notes shift from sugar to paddy production; highlights needs for clear grievance procedures and transparency if land reallocated.
16-18 November 2013	Kilosa District	Discussions with district agriculture officers, village officials and farmers in Mvumi and Kilangali	Discussion of project plans for irrigation rehabilitation and expansion, agronomic interventions, marketing; notes historical controversy on settlement of Kilangali farm, but not in area where expansion of irrigation under this project is planned. Mvumi concerns with

			improved drainage systems.
19-20 November 2013	Mvomero Districts	Discussions with district agriculture officers, village officials and farmers in Kugugu, Mbogo Kigugu	Discussion of project plans for irrigation rehabilitation and expansion, agronomic interventions; No major issues raised but call for working within existing farmer organizations and need for continued consultation
28 November 2013	Zanzibar	Discussions with Shehia officials, irrigation scheme officials and farmers in Kibonde Maji, Mtwango and Kaoni	Discussion of project plans for irrigation rehabilitation and expansion, agronomic interventions. Contract on Kibonde need to be handled transparently; no land compensation issues; no major environmental concerns. Limited use of ago-chemical inputs.
29 November 2013	Zanzibar	Discussions with Shehia officials, irrigation scheme officials and farmers in Banda maji, Mchangani	Discussion of project plans for irrigation rehabilitation and expansion, agronomic interventions, possible resettlement issues; Farmers understand this is a continuation of TASAF efforts in the past and see no significant problems; little agro-chemical use.
30 November 3013	Pemba	Discussions with Shehia officials, irrigation scheme officials and farmers in Dobi 1, Dobi 2	Discussion of project plans for irrigation rehabilitation and expansion, agronomic interventions, possible resettlement issues. Noted that past irrigation infrastructure had led to grievances about land reallocation that were handled poorly; seeks greater transparency of grievance procedures.
1 December 2013	Pemba	Discussions with Shehia officials, irrigation scheme officials and farmers in Kwale Mpona, Machihini and Ole	Discussion of project plans for irrigation rehabilitation and expansion, agronomic interventions, possible resettlement issues; call to work through existing farmer associations for on-going communication and any possible dispute resolution. No major environmental problems foreseen.
22 April 2014	Morogoro Region	Zonal Irrigation and Technical Service Unit, Ephraim Minde, Imani Nzobonaliba, Boniface Mkita	Discussion of importance of water use efficiency; Maintaining adequate drainage for water limited regions; monitoring water rights and monitoring water quality. There seems to be a need to track water use efficiency and water sharing; whereas the traditional role of irrigation engineers is simply to expand infrastructure.
23 April 2014	Zanzibar	Tamirini Said, Conservation Officer; Mchenga Mchenga, Irrigation Engineer, MANR, Saleh Juma, Coordinator Planning, MANR	Discussion of water use efficiency, fair distribution of water rights, monitoring of water quality and the early drafts of the ESMF and IPMP. There is a general concern that environmental regulations are not as well developed as on the Mainland and further work is

			needed to adapt the Mainland regulations to meet Zanzibar's needs. This includes the need to train government staff and farmers about environmental regulations. These need to be reflected in the associated workplans.

Annex C: Verification of Safeguards Policies triggered by ERPP Sub-Projects

I. Environmental Assessment (OP 4.01)
Summary: The Bank requires environmental and social impact assessment (ESIA) of sub-projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable. The environmental assessment is a process that is conducted to identify the negative impacts that a project may have on aspects of the biophysical and social environment. It analysis the impacts of project alternatives, provides mitigation measures to be undertaken to eliminate or minimize the impacts identified.
Objective: To identify potential impacts that a project may have on the environment and to provide mitigation measures to eliminate or minimize these impacts.
The sub-project automatically complies with this policy by complying with the measures and procedures described in this ESMF. Preparation of a preliminary ESIA's including ESMP's is required for Category B sub-projects, and only an ESMP is required for Category C sub-projects.

II. Natural Habitat (OP 4.04)
Summary: The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats1 are land and water areas where (i) the ecosystems' bio-logical communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions. All natural habitats have important biological, social, economic, and existence value. Important natural habitats may occur in tropical humid, dry, and cloud forests; temperate and boreal forests; mediterranean-type shrub lands; natural arid and semi-arid lands; mangrove swamps, coastal marshes, and other wetlands; estuaries; sea grass beds; coral reefs; freshwater lakes and rivers; alpine and sub alpine environments, including herb fields, grasslands, and paramos; and tropical and temperate grasslands. If, as part of the environmental assessment process, environmental screening indicates the potential for significant conversion or degradation of critical or other natural habitats, the project is classified as Category A; projects otherwise involving natural habitats are classified as Category A or B, depending on the degree of their ecological impacts.
Objective: To identify potential impacts that a project may have on natural habitats and to provide mitigation measures to eliminate or minimize these impacts.
The sub-project automatically complies with this policy by complying with the measures and procedures described in this ESMF. Preparation of a preliminary ESIA's including ESMP's is required for Category B sub-projects, and only an ESMP is required for Category C sub-projects.

III. Involuntary Resettlement (OP 4.12)

Summary: Bank experience indicates that involuntary resettlement under development projects, if left unmitigated, often gives rise to severe economic, social and environmental risks: production systems are dismantled; people face impoverishment when their production assets or income sources are lost; people are relocated to environments where their productive skills may by less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. Where people are forced into resettling as a result of a Bank project or a component of the project that may be under other financial arrangements, the Bank requires that those who are affected are treated in such a way so as way as to minimize their disruption and to compensate for their losses. The borrower will be responsible for preparing, implementing, and monitoring a resettlement plan, a resettlement policy framework, or a process framework, as appropriate, that conforms to the policy. The GoT has prepared and disclosed the Resettlement Policy Framework (RPF) which the operator is supposed to comply with should his sub project trigger this policy.

Objective: Involuntary resettlement will be avoided where feasible, or minimized. Where resettlement is required, resettlement activities will be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them to levels prevailing prior to the beginning of project implementation.

Questions:	Actions:
i) Is there any land acquisition resettling in loss of access, restriction or denial of access to that acquired land?	If the answer to one or more of the questions is yes, then a resettlement action plan (RAP) consistent with the disclosed RPF is to be prepared by the operator. Depending upon the significance of the impacts (e.g. minor or less than 200 resettled) an abbreviated resettlement plan would be required only). The plans will ensure that: i) people are informed of the their options and rights pertaining to resettlement; ii) they are consulted and given feasible resettlement alternatives; iii) they are provided prompt and full compensation for losses incurred. If physical relocation is required the plan will: i) provide assistance during relocation; ii) be provided with housing, housing sites, or agricultural sites; iii) offered support after resettlement; iv) provided with development assistance, monitored and granted access to grievance redress mechanisms. Resettlement planning includes early screening, scoping of key issues, the choice of resettlement instrument, and the information required to prepare the resettlement component. To prepare the plan the borrower will draw upon appropriate social, technical, and legal expertise and on relevant community based organizations and NGOs.
ii) Will the taking of land result in relocation or loss of	
iii) Will the taking of land result in a loss of assets or access to assets?	
iv) Will the taking of land result in the loss of income sources or means of livelihood?	

Other comments:

i) At the GoT's request the Bank may provide technical, legal and financial support for resettlement planning and for institutional capacity strengthening as this relates to resettlement
ii) The full cost of resettlement activities to achieve the objectives of the project is included in the total costs of the sub project to be paid for by the operator.
iii) The borrower is responsible for adequate monitoring and evaluation of the activities set forth in the resettlement instrument (i.e RAP).

III. Pest Management (4.09)
Summary: The Bank uses various means to assess pest management in the country and support integrated pest management (IPM) and the safe use of agricultural pesticides: economic and sector work, sectoral or project-specific environmental assessments, participatory IPM assessments, and investment projects and components aimed specifically at supporting the adoption and use of IPM. In Bank-financed agriculture operations, pest populations are normally controlled through IPM approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest. The Bank may finance the purchase of pesticides when their use is justified under an IPM approach.
Objective: In assisting borrowers to manage pests that affect either agriculture or public health, the Bank supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides. In Bank-financed projects, the borrower addresses pest management issues in the context of the project's environmental assessment
Other comments:
The following criteria apply to the selection and use of pesticides in Bank-financed projects: 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 to minimize damage to natural enemies. Pesticides used in public health programs must be demonstrated to be 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.

Annex D: Environmental and Social Screening Form (ESSF)

The Environmental and Social Screening Form (ESSF) has been designed to assist in the evaluation of sub-projects financed under the ERPP. The aim of the ESSF is to: i) assess whether sub-projects are likely to have potential negative environmental and social impacts; ii) determine the proposed sub-project's environmental and social risk level (category); and iii) determine appropriate extent and type of environmental and social assessment required by the national legislation and World Bank Safeguards Policies (including preparation of a Resettlement Action Plan (RAP) and Pest Management Plan (PMP), if applicable).

The DEMO submits the completed ESSF to the MAFC – Environmental Management Unit (EMU)/MANR for review, comments and approval. The safeguard focal point for the ERPP in the MAFC-EMU/MANR must keep a copy of the approved ESSF for each sub-project.

1. General Information		
Name of the Sub-Project:		
Type of Sub-Project:		
Implementing Agency:		
Component of ERPP:	□ Sustainable seed systems □ Improving crop productivity through better irrigation and crop management □ Innovative marketing strategies	
Location:	– **Region:**	
	– **District:**	
	– **City/Village:**	
Evaluator's name:		
Evaluator's email:		
Evaluator's telephone No.:		
Date of completing ESSF:		

2. Sub-Project Description	
Description and general purpose of the sub-project:	**Specific works and activities to be undertaken:**

3. Potential Impacts and Measures		
Impacts		*Measures*
Positive	**Direct:**	
	Indirect:	
Negative	**Direct:**	
	Indirect:	
	Cumulative:	

4. First Preliminary Risk Categorization: Type of Sub-project	
ERPP Type of Sub-Project	*Likely Risk Category*
Rehabilitation of irrigation schemes	C
Expansion of irrigation schemes	B
Construction of warehouses	B – if resettlement is required
Rehabilitation of rural road	B – if resettlement is required
Use of pesticides and herbicides	C

5. Environment and Social Information		
Question	*Yes/No*	*Comment*
Will the sub-project require the acquisition of land, involuntary resettlement or loss of access to land?		If yes, the preparation of a Resettlement Action Plan (RAP) is required. Please see the Resettlement Policy Framework for further details.
Are there outstanding land disputes?		
What is the land currently being used for? (e.g. agriculture, gardening, etc.)		
Will the sub-project require clearance of vegetation?		
Will the sub-project require use of pesticides?		If yes, please see the separate Integrated Pest Management Plan (IPMP)
Will the proposed activity rely on the performance of an existing dam or a dam under construction?		
Based on available sources, consultation with local authorities, local knowledge and observations on the site will the proposed activity affect any physical cultural resources?		
Is there critical natural habitats that could be adversely affected by the sub-project?		
Is there a possibility that, due to installation of structures, such as weirs and other irrigation structures, the river ecology will be adversely affected?		
Based upon visual inspection or available literature, are there areas of possible geologic or		

soil instability (erosion prone, landslide prone)?		
Will the operating noise level exceed the allowable decibel level for that zone?		
Will the sub-project generate solid or liquid waste?		

6. Second Preliminary Classification: Site Sensitivity		
HIGH	*MODERATE*	*LOW*
□ Protected Areas (National Parks, Forest Reserve, etc.) □ High danger of environmental degradation (deforestation, hunt, etc.) □ Sensitive or critical ecosystem (wetlands, mangrove swamps, forests, and others) □ Mountainous topography (>35% of slope) □ Vulnerable areas to natural disasters (floods, earthquake, and others) □ Impact on household or productive lands (more than 200 families affected) □ Presence of physical cultural resources	□ Protected Areas or in Buffer Zones □ Moderate danger of environmental degradation (deforestation, others) □ Sensitive or critical ecosystems (wetlands, mangrove swamps, forests, and others) □ Wavy topography (15–35% of slope) □ Moderate risk to natural disasters (floods, earthquake, and others) □ Impact on houses or productive lands (more than 10 families but less than 200 families) □ Presence of physical cultural resources	□ Intervened areas out of protected areas (national parks, others) □ Low danger of environmental degradation (deforestation, etc.) □ No sensitive or critical ecosystems areas in the influence area (wetlands, mangrove swamps, forests, others) □ Flat topography (<15% of slope) □ Low risk to natural disasters (floods, earthquake, others) □ Absence of physical cultural resources □ No people affected by the project
Site Sensitivity: _____		

7. Environmental and Social Studies Required
Based on the preliminary risk categorization in table 4 (type of project) and the secondary preliminary risk

categorization in table 6 (site sensitivity) please determine the risk category of the proposed sub-project.

Matrix 1: Environmental and Social Risk Category

Preliminary classification	Site sensitivity		
	High	Moderate	Low
b	A	B	B
c	B	B	C

Risk Category	*Safeguards Documents Required*
Category B	□ **Preliminary Environmental and Social Impact Assessment**
Category C	□ **Environmental and Social Management Plan**

Annex E: Content of an Environmental and Social Management Plan (ESMP)

The ESMP is an integral part of the overall implementation of the sub-project. The sub-project ESMP must include a set of mitigation, monitoring and institutional measures to be undertaken during implementation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The ESMP is a sub-project specific action plan presented in table format, which must include the actions needed to implement these measures, including the following features:

1. **Description of adverse impacts**: The anticipated impacts are identified and listed.
2. **Description of mitigation measure and implementation schedule**: Based on the environmental and social impacts identified through the screening process and PESIA for category B sub-projects each measure should be described as well as the schedule for their implementation (timing, frequency, and duration).
3. **Description of monitoring and reporting arrangements:** A specific description and technical details of the monitoring method, including the indicators to be measured, how they will be measured and by whom, the sampling locations, the frequency of measurements, detection limits (where appropriate), and the definition of thresholds that will signal the need for corrective actions, e.g. the need for on-site construction supervision, or the need to test and have a water quality monitoring plan.
4. **Description of responsibilities:** The ESMP should include specific responsibilities for implementing the mitigation measures (i.e. who is responsible for implementing the mitigation measures and carrying out the monitoring regime for operations, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting and staff training.)
5. **Cost estimates for mitigation and monitoring measures:** Include an estimate of the costs of the implementation of the mitigation measures and monitoring activities as well as the source of funds.

Annex F: Generic Environmental and Social Mitigation Measures Checklist

	Land Degradation	**Water**	**Bio-diversity, Natural Habitats and Wetlands**	**People**
Planning	Soil Erosion: (i) Training of Subsistence and Cash Crop Farmers and Pastoralists on soil conservation methods. (ii) Rehabilitate anti-erosion infrastructure such as, micro-basins, micro dams, hill side terracing, soil bunds etc. (iii) Construct new anti-erosion infrastructure as listed in(ii) above. (iv) Introduce crop rotation management, use of fertilizers, tree planting and soil drainage. (v) Control bush burning and fires. vi) Protection of roadsides by planting of vegetation. vii) Protection of outlet of drainage canals and culverts to avoid gully forming downstream of the canal or culvert. viii) Prepare an effective and sustainable maintenance plan.	i) Promote potable water and sanitation sub projects. ii) Promote environmental health measures and public health education. iii) Improve management of household and solid waste, including infrastructure for collection and treatment of liquid waste and waste water. iv) Review, update and enforce pollution control legislation. v) Strengthen enforcement capacity. vi) Develop and implement rural water supply and sanitation policy. vii) Locate sub projects at far/safe distances from water points and sources. viii) Increase public awareness.	i) Consideration of alternative locations/siting of sub projects. ii) Reduce biomass use through provision of alternative energy sources and construction materials (cooking stoves, photovoltaics). iii) Strengthen natural resource management capacities iv) Develop alternatives to slash and burning clearing, decrease overgrazing. v) Promote agroforestry. vi) Wetlands management and small irrigation development. vii) Protect sensitive ecosystems such as forests and wetlands, prevent further encroachment in protected areas. viii) Enforce existing laws. ix) Locate sub projects appropriately. x) Training of communities of sustainable uses of resources. xi) Identify certain species of trees and animals that must be protected. xii) Exclude ecosystems that provided and important habitat for protected species. xiii) Establish buffer zones around protected areas and wetlands	i) Involuntary settlement due to land acquisition, denial or restriction of access to economic resources such as trees, buildings etc., used by members of communities should be avoided or, if not, properly compensated. ii) Provide social services in areas of : •Primary education •Primary health care •Water supply •Micro-finance •Feeder roads •Soil conservation and natural resources management. Basic and required training at district and community levels. Ensure that these services are equitably distributed throughout the districts and that as access is open to all ethnic groups irrespective of status. iii) Ensure that vulnerable groups in sub project areas are included in project activities and benefit from them levels of decision making and implementation. iv) Provide employment opportunities during contracting of civil work etc.
Construction	i) Construction in dry season. Protection of soil surfaces during construction. ii) Adequate protection from livestock entry by fencing the site perimeters. iii) Employ all unskilled labor from local districts and semi-skilled labor first from local districts when available there in. iv) Source goods and services from local districts first, when available. v) Control and daily cleaning at construction sites. vi) Provision of adequate waste disposal services. Proper disposal of chemicals and other hazardous materials. vii) Dust control by water, appropriate design and siting, restrict construction to certain times. viii) Appropriate and suitable storage of building materials on site. ix) Siting of Latrines at safe distances from wells and other water points and using closed systems for sewage drainage. x) Restrict construction to certain hours xi) Minimize loss of natural vegetation during construction; alternative sites; various special measures for sensitive species xii) Restoration of vegetation; cleanup of construction sites. xiii) Safety designs (signage) xiv) Ensure availability of clean potable water for use in latrines, canteens and for drinking. xv) Use of appropriate building materials. No asbestos etc.			
Day to Day Operations	i) Use facilities/infrastructure as designed and as intended. ii) Employ trained staff to man and secure facilities. iii) Log and report any damages done and repairs needed. xvi) Perform periodic monitoring of al aspects as contained in the sub project Environmental and Social Monitoring Plan.			
Maintenance	i) Prepare and adopt suitable maintenance plan. ii) Maintain appropriate budget necessary to implement maintenance plan. iii) Implement maintenance plan in two stages : for activities requiring day-to-to maintenance such as repairs to damages done, regular inspections etc and longer/periodic term maintenance. iv) Have suitably trained staff to carry out maintenance and access to materials/goods/equipment.			

Annex G: Outline for a Preliminary Environmental and Social Impact Assessment

The following is a recommended outline for a PESIA report that would be required for Category B ERPP sub-projects. The DEMO of the sub-project for which use of ERPP funds is being sought, will be required to submit such a report to NEMC for approval if the proposed activity has been identified as a category B in the ESSF.

1. Executive Summary

Briefly describe the main findings of the PESIA.

2. Introduction

Briefly explains the purpose, structure, and audience of the PESIA.

3. Project Description

Describes the project in detail, including goals, objectives, beneficiaries, outcomes, value, schedule, and implementing bodies.

4. Biophysical and Social Environment

Briefly describes both the physical and social environment in which the proposed sub-project will take place, including soils, fauna, flora, protected areas, other special areas, biodiversity, population, ethnicity, relevant cultural patterns and traits, employment, health and relationship of the people to the resources, land use, and development patterns.

5. Potential Environmental and Social Impacts

Identifies the important potential impacts (biophysical and social), the most effective mitigation to conduct, the residual impacts to be expected, and the cumulative effect to be expected. Impacts may or may not be rated on a scale of, for instance, very significant, significant, moderately significant, low significance, or no significance.

6. Legal and Administrative Framework

Briefly describes the main legal instrumentation for environmental control and management, particularly specific instrumentation regarding the type of project and indicates government bodies responsible for each of the relevant instruments. Also, it describes the institutional framework for administration of the relevant environmental legislation and implementation of policy, and analyzes the capacity and effectiveness of institutions.

7. Environmental and Social Management Plan (ESMP)

The ESMP should include the following:

- **Description of adverse impacts**: The anticipated impacts are identified and listed.
- **Description of mitigation measure and implementation schedule**: Based on the environmental and social impacts identified through the screening process and PESIA for category B sub-projects each measure should be described as well as the schedule for their implementation (timing, frequency, and duration).
- **Description of monitoring and reporting arrangements:** A specific description and technical details of the monitoring method, including the indicators to be measured, how

they will be measured and by whom, the sampling locations, the frequency of measurements, detection limits (where appropriate), and the definition of thresholds that will signal the need for corrective actions, e.g. the need for on-site construction supervision, or the need to test and have a water quality monitoring plan.

- **Description of responsibilities:** The ESMP should include specific responsibilities for implementing the mitigation measures (i.e. who is responsible for implementing the mitigation measures and carrying out the monitoring regime for operations, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting and staff training.)
- **Cost estimates for mitigation and monitoring measures:** Include an estimate of the costs of the implementation of the mitigation measures and monitoring activities as well as the source of funds.

8. Literature Cited

A complete reference to all literature cited in the assessment and preparation of the ESIA report