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Government of Republic of Malawi

Ministry of Finance, Economic Planning and Development

MALAWI FLOODS EMERGENCY RECOVERY PROJECT (MFERP)

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ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

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Lilongwe
September, 2015

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Acronyms and Abbreviations

ARAP	Abbreviated Resettlement Action Plan
ASWAP	Agriculture Sector Wide Approach
DC	District Commissioner
DEA	Director of Environmental Affairs
DEC	District Executive Committee
DESC	District Environmental Sub – Committee
DFO	District Forestry Officer
DoDMA	Department of Disaster Management Affairs
EAD	Environmental Affairs Department
EMA	Environment Management Act
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GOM	Government of Malawi
ha	hectare
HIV	Human Immune Deficiency Syndrome Virus
IDA	International Development Association
IRLAD	Irrigation Rural Livelihoods Agricultural Development Project
MASAF	Malawi Social Action Fund
MFED	Ministry of Finance, Economic Planning and Development
MFERP	Malawi Floods Emergency Recovery Project
MGDS	Malawi Growth and Development Strategy.
MK	Malawi Kwacha
mm	millimeter
MoAIWD	Ministry of Agriculture, Irrigation and Water Development
MOEST	Ministry of Education, Science and Technology
MOH	Ministry of Health
MoLGRD	Ministry of Local Government and Rural Development
MoTPW	Ministry of Transport and Public Works
NAC	National AIDS Commission.
NCE	National Council on Environment.
NEAP	National Environmental Action Plan.
NEP	National Environmental Policy.
NGO	Non – governmental organization.
PDNA	Post Disaster Needs Assessment
PIU	Project Implementation Unit
PSC	Project Steering Committee
RPF	Resettlement Policy Framework.
SGR	Strategic Grain Reserve
SRBM	Shire River Basin Management Programme
TCE	Technical Committee on the Environment.
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WUA	Water Users Association

EXECUTIVE SUMMARY

Background and Rationale

Over the past four (4) decades, Malawi has experienced several major droughts and approximately twenty (20) incidences of severe flooding, which heavily impacted smallholder farmers, and also resulted in the loss of life, infrastructure destruction (including roads, rail and homes), crop loss, perpetual food insecurity and health impacts (diarrhea, cholera and malaria). However, the floods that occurred in January 2015, significantly exacerbated an already precarious situation, affecting more than a million people. The proposed Malawi Floods Emergency Recovery Project (MFERP) aims to provide immediate support to the affected populations in restoring their livelihoods, as well as rehabilitating critical infrastructure essential for the restoration of public service delivery and sustainable economic recovery in the flood-affected areas. The project will also seek to increase the institutional capacity of the Government's post-disaster recovery system and promote long-term resilience. The proposed project period is four (4) years, from 2015 to 2018. The Government of Malawi has received a grant of US$80 million for the project from the International Development Association (IDA) of the World Bank Group.

The MFERP will finance key recovery interventions within the fifteen (15) flood affected districts in Malawi, namely: Karonga, Salima, Mangochi, Ntcheu, Zomba, Chiradzulu, Phalombe, Mulanje, Chikwawa, Nsanje, Machinga, Dedza, Balaka, Blantyre, Rumphi and Thyolo. The focus areas of intervention include restoration of agricultural livelihoods, enhanced food security, resilient reconstruction of critical public infrastructure - roads, bridges, schools and health facilities. The selection of interventions and the corresponding resource allocation under the project have been based on prioritization of the most critical needs identified in the recent Post Disaster Needs Assessment.

The specific objectives of the MFERP are:

a) To restore livelihoods and food security for households in the flood affected districts;
b) To rehabilitate/reconstruct damaged roads and bridges in flood affected districts;
c) To rehabilitate irrigation schemes damaged by floods in flood affected districts;
d) To rehabilitate/reconstruct schools and health facilities in flood affected districts;
e) To support the design of disaster resilience infrastructure for flood prone areas.

This document presents the Environmental and Social Management Framework (ESMF) for the Malawi Floods Emergency Recovery Project (MFERP).

Components of the MFERP

The project has four components, each component having sub-components which focus on specific areas of recovery in the flood affected districts:

Component 1: Livelihoods Restoration and Food Security
This component will support rehabilitation of community infrastructure through labor intensive public works programmes. Labor intensive activities will create jobs and provide immediate assistance for livelihood-supporting and income-generating activities. The component will support beneficiaries in meeting household income and basic needs. The other sub-component is restocking of the Strategic Grain Reserves**.** The component will support the procurement of about 60,000 metric tonnes of maize for the grain reserve. The procured maize will support flood affected households (estimated 150,000 to 200,000

households) who would be in need of food assistance for part or all of next year. The budget for the component is US$ 29 million.

Component 2: Infrastructure Rehabilitation and Reconstruction of Public Infrastructure
This component will cover rehabilitation of damaged roads, bridges, schools, health centers, irrigation schemes and water facilities in the 15 flood affected districts. The budget for the component is US$43 million

Component 3: Promotion of Disaster Resilience
The sub-component on Institutional Strengthening will provide technical assistance to strengthen the institutional set-up and operational capacities of Department of Disaster Management Affairs for post-disaster response and recovery. Activities will include: (a) improving data preparedness and capacity development for post-disaster needs assessment; (b) strengthening recovery planning and implementation; (c) developing community mapping and improve land use planning; (d) enhancing disaster response systems; and (e) carrying out a study to assess the viability of railways rehabilitation. The second sub-component is Multi-sector Design of Disaster Resilient Infrastructure which will provide technical assistance to different departments and ministries for the development and institutionalization of disaster and climate-resilient design standards for infrastructure construction in the future. This could include the design of roads, drainage infrastructure and public buildings, such as schools, health centers and government offices. The budget for the component is US$4 million.

Component 4: Program Management
This component will finance the following activities: (a) incremental operating costs of the Project Implementation Unit (PIU); (b) technical designs for the reconstruction and rehabilitation of infrastructure included under various Project components; (c) supervision quality control and contract management of reconstruction and rehabilitation sub-projects; and (d) audit studies and assessments required under various Project components. The budget for the component is US$4 million.

The Government of Malawi will establish a dedicated PIU at central level to spearhead effective and efficient recovery planning and execution of project activities. The mechanism will also rely upon existing local government delivery mechanisms for implementation at the sector and community level.

Policy, Legal and Administrative Framework

Various legal instruments influence environmental and social management in Malawi. The National Environment Action Plan and the National Environmental Policy provide the basis for environmental planning and development in the country. The Environmental Management Act (1996) which provides the framework for environmental and social impact assessment for prescribed projects and defines the roles and responsibilities of various public authorities in environmental planning and management. The Director for Environment Affairs in the Environmental Affairs Department of the Ministry of Climate Change Management and Environment Affairs is overall responsible for the administration of environmental management. Other legal instruments of relevance to the MFERP are the National Irrigation Development Policy (1999) and Irrigation Bill; National Disaster Risk Management Policy (2015); Local Government Act (1998); Disasters and Relief Act (1991); National Water Policy (2005) and Water Resources Act (2013); Public Health Act (1966); Occupational Safety, Health and Welfare Act (1997); The Pesticide Act (2000); National HIV/AIDS Policy (2012); National Gender Policy (2000); National Parks and Wildlife Act (63:01); The Malawi National Land Policy; Land Act and Land Acquisition Act; and the Town and Country Planning Act.

Initial evaluation of MFERP under World Bank Safeguards Policies indicates that some of sub-projects within the MFERP may have adverse negative environmental and social impacts. The project has therefore been rated under category B of Operational Policy 4:01 (Environmental Assessment). Other safeguards policies which likely to be triggered are: Operational Policy 4:04 (Natural Habitats), Operational Policy 4:11 (Physical Cultural Properties) and Operational Policy 4.12 (Involuntary Resettlement).

Potential Beneficial Socio-Economic Impacts of the MFERP

In line with the objectives of the MFERP, it is expected that the significantly beneficial socio-economic impacts will be derived from the project as follows:

- The project will provide direct employment to flood affected people through labor intensive public works in the 15 flood affected districts. About US$ 14million has been allocated for implementation of labor intensive public works activities within flood affected communities. Flood affected people will be employed for 20 days at a daily rate of about MK836.00. This component, therefore, intends to facilitate the restoration of livelihoods by providing household income and farm inputs.

- The project will contribute to food security among flood affected communities through supply of relief maize within the next 15 months and restoration of winter cropping (small scale irrigation schemes). The project will support restocking of Strategic Grain Reserve with more maize for emergency needs for flood affected people in the next agricultural season. The volume of maize will be about 60,000 metric tonnes. Distribution to flood affected households in the 15 districts will be done through the existing modalities using the World Food Programme (WFP) under the supervision of the Department of Disaster Management Affairs.

- The project will contribute to rehabilitation of irrigation schemes in the 15 flood affected districts. In both short and medium term, rehabilitated irrigation schemes are expected to: (i) restore agricultural production by providing communities with inputs and enabling off-season planting; and (ii) restore household income and food through improved agricultural production.

- The project will support rehabilitation and re-construction of better public school facilities in lower flood-risk areas in all 15 flood affected districts. New schools in Nsanje and Chikwawa will be designed and constructed to operate as education facilities as well as evacuation centers. The rehabilitation of public schools is expected to: (i) restore school enrolment and attendance rates; (ii) restore access to water and sanitation facilities for pupils; and (iii) avoid negative impacts of the rainy season in these sectors for the design period of 15 years, and ensuring adequate access to these basic services for the population of the 15 affected districts. New health centers will be designed and constructed as evacuation centers as well.

- The project will support rehabilitation and re-construction of damaged roads and bridges in some flood affected districts. The proposed works include resealing and rehabilitation of the road and bridges for about 100 kilometers. The proposed rehabilitation of the road network will follow the “Build Back Better” approach to minimize damages from future flood risks, which will particularly entail raising the embankment height to protect the main pavement structure from recurrent flood water and raising of drainage structures such as bridges, culverts and drifts. The economic justification of the flood resilient works in the transport sector was also analyzed based on the avoided costs of reconstruction and increased periodic maintenance that would be required based on the historic levels of recurrent flooding.

Potential Negative Impacts associated with the MFERP

Significant negative environmental and social impacts would emanate from rehabilitation and re-construction works of roads, bridges, irrigation schemes, schools and health facilities. These include:

- An increase in rate of deforestation within the flood affected districts. This impact would result from clearing land during rehabilitation and construction works. In addition, timber and poles may be required for construction of camps, while in-migrant workers would put added pressure on wood for charcoal and fuel.
- Soil erosion, siltation and increased surface runoff due to excavation activities and civil works associated with the construction of public works, the rehabilitation of roads, bridges, and schools.
- An increase in the prevalence rate of HIV/AIDS and other communicable diseases in districts as a result of increased incidents of sexual interaction between migrant workers and local women, partly as a consequence of additional disposal income.
- Pollution of water resources from petroleum products (oil spills from construction vehicles and machinery), pesticides/agrochemicals used in the irrigation schemes, as well as increased sediments from soil erosion.
- Reduced flow in rivers from which water will be abstracted for irrigation schemes and water supplies, which may compromise downstream human and ecological demand.
- Risks of spread of alien/invasive plants from “contaminated equipment” such as front end loaders, dozers, graders, tractors and vehicles during civil works by contractors and which may have been used elsewhere. Murram/gravel imported from outside the project areas also contribute to spread of invasive plants.
- Spread of malaria in the districts as a result of pools of stagnant water in borrow pits or water logged areas which provide breeding habitats for mosquitoes.
- Risks of water logging and salinization as a result of poor drainage of soils of in the irrigation schemes, application of excess water to irrigated fields and use of excessive amounts of fertilizers.
- Impacts on human health (e.g. skin ailments, poisoning and respiratory diseases) due to exposure to agro-chemicals used in the irrigation schemes.
- Marginalization of women and other vulnerable groups in the selection of beneficiaries of relief food and cash transfer public work activities where employment opportunities are not are offered on a fair and equitable basis.
- Loss of houses/structures and trees during rehabilitation of roads and bridges, for example during re-construction works involving the expansion of carriage way and upgrading the roads to bitumen standard.
- An increase in dust emissions as a result of excavation and civil works activities during rehabilitation/re-construction of roads, bridges and some public works activities.

Environmental and Social Management Framework for the Project

The appraisal under category B of Operational Policy 4:01 (Environmental Assessment) entails that potential environmental and social impacts would have moderately significant

environmental and social impacts and there is need for the development of environmental and social management plans to address and manage these impacts.

This Environmental and Social Management Framework (ESMF) has been prepared as guide for environmental screening and management of all sub-projects under the MFERP. The ESMF provides an overall guidance on environmental and social screening and management of the project. Separate and detailed environmental and social management plans will be prepared to cover specific sub-projects to be implemented under this project. It has not been possible to prepare site specific environmental and social management plans because the specific locations of within the 15 flood affected districts are not known at this time, and the identification of project sites and scope of construction, rehabilitation and re-construction works have not been finalized.

A separate Resettlement Policy Framework (RPF) has been prepared to guide resettlement planning and management of potential socio-economic risks from project activities relating to land acquisition, and physical and economic displacement.

Summarized environmental and social management plans for rehabilitation and re-construction of public infrastructure such as roads, bridges, irrigation schemes, schools and health centers are presented in this ESMF. These plans will be used as guidelines in preparation of site specific environmental and social management plans for sub-projects (construction and rehabilitation works) in the 15 flood affected districts.

The main purpose of the ESMF is to, (a) establish clear procedures and methodologies for the environmental and social assessment, review, approval and implementation of invest-ments to be financed under the project, (b) specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to project investments, (c) determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF, and (d) provide practical information resources for implementing the ESMF**.**

The framework contains useful information on the procedures and checklists for environmental and social screening for sub-projects, potential environmental and social impacts, measures for addressing the negative impacts, and recommended environmental and social rules for contractors. In addition, the framework contains a list of required statutory approvals/licenses which need to be obtained in order to ensure that the implementation and management of the project follow sound environmental and social management practices as stipulated in the Malawian environmental laws and regulations and World Bank operational policies.

The main user of this document will be the PIU. In addition the ESMF will be used by implementing agencies such as the Ministry of Local Government and Rural Development, Ministry of Education, Science and Technology, Ministry of Agriculture, Irrigation and Water Development, Ministry of Natural Resources, Energy and Mining, district councils, project consultants, project construction contractors, and Environmental Affairs Department, as well as non – governmental organizations and civil society organizations, and development partners working with the World Bank on the project, such as the World Food Programme, UNICEF and United Nations Population Fund.

1. INTRODUCTION

1.1 Background

Farmers in Malawi are highly vulnerable to natural hazards such as extreme rainfall and floods. Between 1967 and 2013, Malawi experienced several major droughts and about 20 incidences of severe flooding, which heavily impacted smallholder farmers, and also resulted in the loss of life, infrastructure destruction (including roads, rail and homes), crop loss, perpetual food insecurity and health impacts (diarrhea, cholera and malaria). The seasonal rainfall experienced in January 2015 was the highest on record for Malawi, and caused significant flooding – predominantly in the Southern Region, exacerbating an already precarious situation for rural households in this region. It is estimated that the floods affected 1,150,000 people, displaced 336,000 and killed 104 people, destroyed homes, washed away livestock and inflicted substantial damages and losses in the productive, public infrastructure and social service sectors, including private and community assets. As a result, on January 13, 2015, the President declared a state of disaster for the following 15 districts: Nsanje, Chikwawa, Phalombe, Zomba, Blantyre, Chiradzulu, Thyolo, Mulanje, Balaka, Machinga, Mangochi, Ntcheu, Salima, Rumphi and Karonga.

In early 2015, at the request of the Government of Malawi (GOM), a comprehensive Post Disaster Needs Assessment (PDNA) was prepared, led by the Department of Disaster Management Affairs (DoDMA) and supported by the World Bank in partnership with the United Nations Development Programme (UNDP) and the European Union. The PDNA provided an impact and needs assessment across 12 selected sectors, cross-cutting guiding principles and a preliminary recovery strategy; and a roadmap that prioritizes early, medium and long-term needs for each sector. The activities proposed under the Malawi Floods Emergency Recovery Project (MFERP) are based on a prioritization of the most critical needs identified by the current version of the PDNA, including the transport, agriculture and other public infrastructure sectors. The MFERP also intends to move the vulnerability-reduction agenda forward to help Malawi mitigate similar disasters in the future. In order to implement these priority activities, the GOM is seeking US$80 million from the International Development Association (IDA) Crisis Response Window (CRW) to help support the recovery phase. The funds will primarily focus on the sustainable restoration of agricultural livelihoods, enhanced food security, resilient reconstruction of critical public infrastructure (roads, bridges, schools and health facilities), restoration of services, and investments in longer-term risk reduction. The proposed project period is 4 years, from 2015 to 2018.

The map in Annex 4 shows the location of flood affected districts in the country.

1.2 Project Aims and Objectives

The aim of the MFERP is to provide immediate support to the affected populations in restoring their livelihoods, as well as rehabilitating critical infrastructure essential for the restoration of public service delivery and sustainable economic recovery in the flood-affected areas. In addition, the project will also seek to increase the institutional capacity of the Government's post-disaster recovery system and promote long-term resilience. Specific objectives are:

a) To restore livelihoods and food security for households in the flood affected districts;
b) To rehabilitate/reconstruct damaged roads and bridges in flood affected districts;
c) To rehabilitate irrigation schemes damaged by floods in flood affected districts;

d) To rehabilitate/reconstruct schools and health facilities in flood affected districts;
e) To support the design of disaster resilience infrastructure for flood prone areas.

1.3 Proponent and Implementing Agencies

The proponent of the proposed MFERP is Government of Republic of Malawi. Contact details and addresses of the proponent are as follows:

Proponent Name	:	Secretary to Treasury
	:	Ministry of Finance, Economic Planning and Development
Postal address	:	P.O. Box 30049, Capital City,
		Capital Hill, Lilongwe 3, Malawi.
Telephone	:	265-01-789 355
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E-mail	:	finance@gov.mw.net
Project Contact	:	Dr Ronald Mangani/ Peter Simbani

A central Project Implementation Unit (PIU) based in Lilongwe will coordinate the overall implementation of the MFERP. The unit will be supported by sectoral ministries and these will include: Ministry of Agriculture, Irrigation and Water Development, Ministry of Lands, Housing and Urban Development, Ministry of Local Government and Rural Development, Ministry of Natural Resources, Energy and Mining, Ministry of Transport and Public Infrastructure, Roads Authority, Department of Disaster Management Affairs, Ministry of Health, Department of Irrigation Services, Ministry of Education, Science and Technology. There will be number of consultants and contractors will be hired in the design and implementation of civil works to enhance good quality and timely completion of activities.

1.4 Project Appraisal under World Bank Safeguards Policies

Initial appraisal of MFERP under World Bank Safeguards Policies has indicated that the project may potentially have moderately adverse environmental and social impacts resulting from the proposed rehabilitation and reconstruction works of roads, bridges, schools, health centres, and irrigation schemes. The project has therefore been rated under Category B of Operational Policy 4:01 (Environmental Assessment). Under OP 4:01, Category B projects need environmental and social management plans to be prepared in order to appropriately address these anticipated impacts. Other safeguards policies triggered are: Operational Policy 4.09 (Pest Management), Operational Policy (OP4.04) Natural Habitats, Operational Policy 4:11 (Physical Cultural Properties) and Operational Policy 4.12 (Involuntary Resettlement).

1.5 Justification for and Purpose of this ESMF

Section 24 of Environment Management Act (60:02) stipulates the integration of environmental and social considerations in various development activities in Malawi. The proposed rehabilitation and reconstruction works under MFERP has potential to generate several negative impacts to the environment.

This Environmental and Social Management Framework (ESMF) provides a framework to upstream environmental and social considerations into the design and implementation of the various sub-projects of the project. The ESMF has been prepared to guide the environmental screening and management of all sub-projects. It should be pointed out

however, that upon screening, some sub-projects may be subject to further environmental assessment before implementation. A separate Resettlement Policy Framework (RPF) has been prepared to guide resettlement planning and management of socio-economic risks from project activities.

The justification for this framework is as follows:

- At this stage, the specific locations of rehabilitation and re-construction works within the communities are not known as land sites will be selected at a later stage by the implementing agencies.

- Civil works under the MFERP would be fairly extensive both in terms of types of rehabilitation works as well as geographical coverage. Based on previous experience in construction/rehabilitation works, roads, bridges, irrigation schemes, water supply schemes generate considerable environmental and social impacts within the project sites. In this context, the rehabilitation/reconstruction of the roads, bridges, schools and health centres would result in clearance of trees/vegetation, soil erosion, dust emissions, vehicular emissions and noise nuisance from construction vehicles and activities, contamination of land from spillage of oils and fuel, increased sediment loads in rivers/streams, and the generation of solid and liquid wastes from the workforce.

- Impacts during operation of roads, bridges, water supplies, health centres and schools include noise nuisance, emissions, traffic accidents, and the generation of solid and liquid wastes.

- Rehabilitation and reconstruction works of irrigation schemes in the 15 flood affected districts would necessitate the use of various agrochemicals for the management of pests and diseases in various crops on the schemes. Operational activities of irrigation schemes would generate a range of negative environmental impacts and effects, including soil erosion, water logging and salinization of soils, increase in multiplication of water borne diseases, loss of biodiversity from use of pesticides, poisoning from pesticides and spread of invasive plants.

The main purpose of the ESMF is therefore to:

i. establish clear procedures and methodologies for the environmental and social assessment, review, approval and implementation of investments to be financed under the project,
ii. specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to project investments,
iii. determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF, and
iv. provide practical information resources for implementing the ESMF.

The ESMF contains useful information on the procedures for environmental and social screening for sub-projects, potential environmental and social impacts, measures for addressing the negative impacts, and recommended environmental and social rules for contractors. In addition, the framework provides information on required statutory approvals/licenses which need to be obtained in order to ensure that the implementation and management of the project follows sound environmental management practices stipulated in various policies and pieces of legislation in Malawi. Such information will be useful in planning, implementation of the proposed project activities. In this regard, the report will

provide guidance to implementing agencies such as Ministry of Local Government and Rural Development, Ministry of Education, Science and Technology, Ministry of Agriculture, Irrigation and Water Development, Ministry of Natural Resources, Energy and Mining, district councils, project consultants (Project Manager, Project Architects, Landscape Architects and Project Engineers), project construction contractors, and the Environmental Affairs Department. The framework will also be useful to nongovernmental organizations (NGOs) and civil society organizations (CSOs), and development partners working with the World Bank on the project, such as the World Food Programme, UNICEF and United Nations Population Fund

1.6 Approach and Methodology

The focus of the assignment was to undertake initial scoping of potential environmental and social impacts of the activities and prepare an environmental and social management framework to guide the environmental and social considerations in project planning and implementation. In order to achieve these targets, the following methodology was employed:

Step 1: Review of existing literature.
This involved a review of existing literature and documents to obtain information and data relevant to the project. Documents reviewed included: project concept papers, project approval documents, World Bank Environmental and Social Safeguards Policies, environmental profiles in Malawi, national environmental and social related policies and pieces of legislation. Examples of data and information obtained from such sources include background information on project, background information on Malawi's environmental policies and pieces of legislation, data on rainfall, flora and fauna, population statistics, altitude of the area; rainfall figures and the maps used in the report. All these documents have been duly acknowledged in the references provided at the end of this document.

Step 2: Field surveys in the project area.
Field surveys were carried out in four flood affected districts: Salima, Mangochi, Phalombe and Chikwawa. The objectives of the field surveys were to observe extent of damage to assets such as land, crops, and other structures by floods. The field surveys also assisted to capture baseline data on the components of the environments. In addition, the field surveys provided opportunities to characterize the scale/extent of potential impacts and effects from construction/rehabilitation works.

Step 3: Stakeholder Consultations.
This step involved soliciting views from selected stakeholders as follows:

- Consultations with senior officials at various government ministries and departments. These included Ministry of Finance, Economic Planning and Development, Ministry of Education, Science and Technology, Ministry of Health, Department of Disaster Management Affairs. The discussions centered on aim and objectives of the project, the scope of the project, design and modalities of implementation. Consultations took place in Lilongwe on 18 -27 March 2015.
- Interviews and discussions with senior central government officials. These discussions involved senior officials of government departments such as Environmental Affairs Department, Regional Commissioner for Lands and Valuation (centre), Buildings Department and National AIDS Commissions (NAC). The discussions centered on screening of potential impacts and ways and means implementing suitable mitigation measures for potential environmental and social impacts. Consultations took place from 22- 27 March 2015.
- Interviews and discussions with local government officials in four of the 15 flood affected district councils.

- Interviews and discussions with flood affected people in four selected camps in flood affected districts. Names of displaced people interviewed at the camps are not provided in order not to raise their expectations from visitors to the camps.

Lists of all other stakeholders consulted are presented in Annexes 8-11.

Step 4: Development of Environmental and Social Screening Forms.
This involved the preparation of checklist for appraisal of the potential sub-projects from the components of the projects. The screening check list would be used by local council staff for screening potential impacts of projects on the proposed sites, and also around the environment. The screening forms contains basic checklist for identifying potential impacts whether from rehabilitation of damaged roads, bridges, irrigation schemes among others.

Step 5: Preparation of Environmental and Social Management Plans.
This step involved the identification of mitigation measures for the potential negative impacts; identification of agencies for implementation of mitigation measures, budget estimates and development of monitoring systems for the implementation of mitigation measures.

1.7 Constraints and Limitations

The information presented in this report is by and large consistent with the data and information gathered through the various sources and approaches outlined above. However, just as in any study, there could be some gaps of information in the report. One constraint was that some district council officials and flood affected people in rural areas (who are ideally key stakeholders to the project) understood the purpose of environmental and social assessment of the project and the preparation of environmental and social management framework differently due lack of knowledge and advance awareness of the exercise. Some displaced people in camps in Mangochi and Chikwawa expected some more relief food and materials from consultants instead providing views. In view of this, the consultants devoted some considerable time in awareness discussions, including question and answer sessions, prior to settling down to real issues of consultation. Secondly, the consultants could not interview and discuss with all agencies to be involved in implementation, local government officials and flood affected households in field surveys due to time limitations. Examples of those stakeholders not consulted are students and teachers affected by floods. As such, while the findings and issues advanced in this report reflect the general views and feelings of some selected people, they may not cover the specific issues from some unique situations or some individuals affected by floods in the 15 affected districts. Lastly, but not least, some of the information in the framework was processed from secondary sources and such data include information for initial project proposals, rainfall and temperature data, employment data, population data among others. It is therefore necessary to understand such information with the time reference and their inherent limitations.

2. PROJECT DESCRIPTION

The MFERP development objective is to "sustainably restore agricultural livelihoods, reconstruct critical public infrastructure to improved standards in the flood-affected districts, and improve the Government of Malawi's disaster response and recovery capacities". This will be achieved through a combination of recovery interventions across the most affected sectors, aimed at the following key outcomes: (a) sustainable restoration of agricultural production and livelihoods as well as enhanced food security for the flood-affected people; (b) reconstruction and improvement of roads, schools, as well as health, irrigation, water resources and water supply facilities to disaster resilient standards; and (c) institutionalization and adoption of strengthened and improved disaster recovery and response systems.

Thus the project has four key components:
1. Livelihoods Restoration and Food Security,
2. Infrastructure Rehabilitation and Reconstruction,
3. Promoting Disaster Resilience, and
4. Program Management.

These components are part of multi-sectoral and programmatic Disaster Recovery Framework under preparation by Malawi Government. The following sections outline the proposed scope of MFERP activities.

2.1 Project Components

COMPONENT 1: LIVELIHOOD RESTORATION AND FOOD SECURITY

This component includes the provision of: (a) immediate livelihood support to the predominantly agricultural community and households in the flood-affected areas and; (b) food support to meet the critical needs of the affected populations by enhancing and restocking the Government's Strategic Grain Reserve (SGR). The estimated budget is US$29 million. There are two sub- components, and these are:

Sub-Component 1.1: Labor-Intensive Community Infrastructure Repair (US$14 million)

This sub-component will provide immediate assistance for livelihood-supporting and income-generating activities. It will enable beneficiaries to meet their basic requirements by providing farm inputs for the next season and other in-kind assistance in return for their participation in labor-intensive community infrastructure repair schemes. These interventions will create jobs while simultaneously repair and restore community infrastructure as well as indirectly regenerate farmers' agricultural production. This will allow beneficiaries to meet their food and basic household needs, while the restoration of community assets will also support more diversified and sustainable livelihoods.

Sub-project activities will involve repair and reconstruction of flood-damaged community assets or new assets that increase resilience to future flooding and that have wide public benefit. Examples of sub-projects will be rural feeder roads; soil conservation and afforestation works; storm and road drainage works; reservoirs; embankments; market collection centers; community grain banks; and small-scale irrigation.

This sub-component will comprise costs for the inputs (vouchers), the materials/implements to be used during works, additional small works element for which skilled labor needs to be contracted locally, and district administration and technical oversight. The largest percentage of costs (70 percent) will go to inputs in keeping with the objective of the program, leaving the balance to cover the costs of conducting the technical feasibility studies; purchase of inputs (such as cement, seedlings and hand tools); training of project management committees; hiring and training foremen and forewomen; and the transaction costs of the voucher system (printing and distributing vouchers to the workers and the handling charges for distributors and retailers/dealers).

This sub-component will broadly adopt the Inputs for Assets (IFA) approach that has been successfully implemented in Malawi for over the past 12 years, and blend in elements of the equally successful Malawi Social Action Fund (MASAF) approach. It has been designed as a hybrid between traditional farm input subsidy in Malawi and traditional public works programs. Customarily, participants work for one month (20 days) on a community asset and, in return, receive a voucher for farm inputs with the objectives of reducing food insecurity and improving rural infrastructure and developing public assets. While the Project will borrow from MASAF in terms of the implementation approach, it will only focus on providing agricultural inputs and in-kind assistance as opposed to the cash for work option provided under MASAF.

Sub-Component 1.2: Restocking of the Strategic Grain Reserve (SGR) (US$15 million)

This sub-component will support restocking of strategic Grain Reserve to procure more maize for emergency needs of flood affected people in the next agricultural season. An estimated 150,000 to 200,000 households could be in need of food assistance for part or all of next year. It is therefore anticipated that an additional 20,000 to 25,000MT of maize should be released from the SGR for food assistance. To maintain the SGR at its optimal level, the Project will contribute to its replenishment for an estimated amount of 60,000MT. This amount is based on the current maize market trends and a simulation of various quantity, supply and price scenarios. Purchase of maize will be done through the existing national mechanisms in compliance with the Bank's guidelines for procurement of goods. Release of maize for food assistance will follow existing procedures based on the PDNA and MVAC estimates. Distribution will be done through the existing modalities using the World Food Programme (WFP) under the supervision of the Department of Disaster Management Affairs (Department of Disaster Management Affairs).

The restocking of the SGR will utilize existing government mechanisms and will be under the direct supervision of Ministry of Agriculture, Irrigation and Water Development and the National Food Reserve Agency (NFRA), as the managing entities of the reserve. The purchase of maize will use the three following channels and these are:

a) Direct procurement by NFRA: NFRA organizes maize purchases several times a year to restock the Reserve and has experience in the maize commodity market.
b) Agricultural Commodity Exchange for Africa (ACE): ACE is a spot and forward market commodity exchange that has adopted widely used regional commodity quality and trading standards. Supported by USAID, ACE is known in Malawi for successfully promoting the warehouse receipt system that offers market opportunities to small local traders and farmer organizations and cooperatives. ACE is already used on a regular basis by various institutions, including the World Food Programme (WFP), and has been successfully utilized by bilateral donors (Irish, Norway and Flanders Co-operations) for grain reserve restocking.
c) Auction Holdings Limited Commodity Exchange (AHCX): AHCX is a recently established subsidiary of the Auction Holdings Limited that has more than 70 years of experience in tobacco auction trading. AHCX is now active on the private trading of agricultural

commodities, including maize and other traded legumes such as groundnuts and soya beans.

COMPONENT 2: INFRASTRUCTURE REHABILITATION & RECONSTRUCTION

This component will finance the reconstruction and rehabilitation of selected critical public infrastructure destroyed or damaged by the floods. This will include access, irrigation, social, flood protection, water resources management, water and sanitation infrastructure. This component will mainly use hired contractors for reconstruction and rehabilitation, complementing the labor-intensive program under Component 1. These investments will be guided by sector Building-Back-Better standards, such as right sizing and right siting, as well as the Flood Risk Management Action Plan under the SRBMP. The estimated budget is US$43 million. These will be technically screened to ensure adequate flood resistant designs. There are three components as follows:

Sub-Component 2.1: Reconstruction and Improvement of Roads and Bridges (US$24 million

This sub-component will support the reconstruction and improvement of selected critical access infrastructure, including secondary roads, bridges and other drainage structures. The PDNA estimated that a total of 213km of secondary roads were affected, of which more than 100km is comprised of a single road (S151 and S152) in the Lower Shire in Chikwawa and Nsanje districts. The Project will support the reconstruction and improvement of a part of the fully destroyed and washed away secondary roads in these districts. The estimated length of secondary roads that will be reconstructed using project funds is 60km. Since these roads are routinely washed away during the rainy season, the project will build these roads to improved standards to make them more resilient to floods as well as offer a more sustainable solution for their future operation and maintenance. This will include the rehabilitation and reconstruction of drainage structures, such as bridges, that will be designed for enhanced structural stability and to ensure resilience against similar future disasters.

The above works will be implemented by the Roads Authority and the Road Fund Administration (RFA), which are also currently implementing works under the ongoing Agricultural Sector Wide Approach Support Project Roads Component as well as the upcoming Southern Africa Transport and Trade Facilitation Programme (SATTFP).

Sub-Component 2.2: Rehabilitation of Irrigation Schemes and Rural Water Supply and Sanitation (US$5 million)

This sub-component will fund the operational restoration of selected and prioritized irrigation and water supply schemes that have been destroyed or damaged by the floods. This will entail the design, supervision, repair and rehabilitation of:

- *Critical Irrigation Schemes and Infrastructure:* This can include headwork's, flood protection bunds, main canal sections, drains and in-field infrastructure. All of the irrigation schemes proposed to be rehabilitated are community infrastructures that are smallholder farmer managed and range from mini schemes (below 10 hectares) to about 400 hectares. Permanent repair will be required especially for recently constructed and revived schemes that were showing high productivity and have incurred a significant setback.

- *Water Supply and Sanitation Schemes and Infrastructure:* This can include water intake structures, water treatment plants, conveyance systems, storage systems, distribution networks, pumping stations, wells and boreholes.

Repairs under this sub-component shall be prioritized based on the damage assessment above and will be refined prior to implementation in consultation with the Government. They will focus on revitalizing the area, leading back to high value production as soon as possible. They will also prioritize schemes where relatively small repairs unlock large productive areas quickly, and where performance of management by Water User Associations (WUA) has been good. Since many of these schemes have received integrated support on scheme management, marketing and farmers' organization over the past years under different programs, the MFERP focuses only on physical repairs to infrastructure (canals, bunds, roads, buildings, drains and headwork's) that are a priority and beyond the ability of Water Users Association to repair.

Sub-Component 2.3: Water Resources Management (US$6 million)

This sub-component will finance flood mitigation works, including: (a) river training works; (b) river bank protection, afforestation of river banks and localized embankment repair works in critical flooding rivers; (c) creation and restoration of storm-water drainage; (d) restoration of riparian forests; and; (e) flood protection bunds around critical infrastructure.

These works will complement the activities carried out under the community infrastructure schemes of Component 1.1 and will respond to the requirements of the Flood Risk Management Action Plan as identified under the SRBMP. The SRBMP will assess the needs and advise on implementation modalities. This will also enhance the MFERP, as the Project will be able to leverage support structures already in place, including flood modeling; early community plans; flood risk management guidelines; technical assistance in the form of an implementation service provider which can be a technical clearing house for water-related investments; hydromet systems; early warning system design; and mapping.

Sub-Component 2.4: Rehabilitation and Reconstruction of Education and Health Facilities (US$8 million)

This sub-component will primarily include the rehabilitation and in-situ reconstruction of a proportion of the schools and health facilities damaged or destroyed by the floods. In line with PDNA results, the sub-component will seek to reconstruct and restore the functionality of damaged schools and health facilities (including their upgrading) as well as finance the replacement of school learning materials, medical equipment and medical supplies. In some cases, facilities in high-risk locations will be rebuilt in less vulnerable areas and schools and health facilities will double up as evacuation centers. This sub-component will also incorporate the element of Building Back Better, such as right sizing and right siting, as well as promoting disaster preparedness and risk reduction activities. In addition to the above reconstruction and major rehabilitation, and if needed, part of the funding could also be used for repair of partially damaged education and health facilities.

The sub-component will also fund water, sanitation and hygiene facilities and improvement in sanitation standards of schools in these new settlement areas. The Project will take into consideration proper sanitation facilities in education structures, especially as they double up as safe havens/evacuation centers and should be able to accommodate periodic influx of flood-affected communities from the surrounding flood plain. Boreholes, water tanks, water kiosks and latrines should be integrated in the design of these centers. Several previous initiatives have proposed flood-resilient designs and construction techniques and lessons of these initiatives need to be considered in the coming reconstruction phase.

COMPONENT 3: PROMOTING DISASTER RESILIENCE

This component will provide technical assistance for: (a) strengthening the Government's post-disaster response and recovery systems; and (b) development and institutionalization of disaster resilient design standards for future infrastructure construction across multiple sectors. Budget for the component is US$4 million. The following sections highlight the proposed activities:

Sub-Component 3.1: Institutional Strengthening of Department of Disaster Management Affairs (US$2 million)

This sub-component will strengthen the institutional set-up and operational capacities of Department of Disaster Management Affairs for post disaster response and recovery. Activities will include:

a) *Improving Data Preparedness and Capacity Development for PDNA*: This will include: (i) review and improvement of the national damage assessment guidelines; (ii) formalization of institutional roles and responsibilities for PDNA, including Standard Operating Procedures (SOPs) for its execution; (iii) strengthening the role of the Malawi Spatial Data Portal (MASDAP) for damage data management and sharing; (iv) building the capacity of District Civil Protection Committees in the use of the PDNA methodology and; (v) development of guidance notes and data templates for data collection in the aftermath of disasters.

b) *Strengthening Recovery Planning and Implementation:* This will entail support for conducting reviews and diagnostics to improve: (i) existing national and local institutional frameworks for disaster recovery; (ii) institutional coordination and oversight mechanisms for recovery; and (iii) country budgetary and resource allocation processes, and financial management systems for recovery.

c) *Community Mapping and Land Use Planning:* This will include: (i) scaling up community mapping in selected communities of the disaster-affected districts; (ii) carry out a flood zone mapping based on existing topographic information and models developed as a background for the selection of flood mitigation measures and spatial planning; and (iii) develop land use plans that factor Disaster Risk Management (DRM). Land use planning will entail collating the best available information on historical and existing land use, disaster scenarios, investment and land use incentives, land use management practices, and proposed major land use management changes.

d) *Enhancing Disaster Response Systems*: This will include technical assistance for (a) training District Civil Protection Committees in disaster response; (b) identifying technical enhancement needs of operational facilities, such as Emergency Operation Center (EOCs), and; (c) training of staff in Department of Disaster Management for coordination and emergency response.

e) *Railway Rehabilitation Study*: A study under this component will look at the viability of the rehabilitation of railway lines and rail bridges affected by the floods. This is especially true in the Southern Region where major damage can be seen across the line, bridges, culverts and protection works. The effects are much evidenced between Makhanga and Limbe, where the line was affected due to the Ruo River changing its course and creating a 100m gap. This study will therefore assess the economic viability of the rehabilitation of railway lines as well as measures to enhance their physical resilience to disasters. It will determine whether it is technically, operationally and financially viable to rehabilitate flood-affected lines or to explore alternative transportation solutions.

Sub-Component 3.2: Multi-sector Design of Disaster Resilient Infrastructure (US$2 million)

This sub-component will provide technical assistance to different departments and ministries for the development and institutionalization of disaster and climate-resilient design standards for infrastructure construction in the future. This could include the design of roads and drainage infrastructure and public buildings, such as schools, health facilities and government offices.

This sub-component will also provide technical assistance for: (i) a review and strengthening of guidelines for safer housing; (ii) development of an awareness raising strategy in respect to the use of safer housing construction guidelines and; (iii) development of national building codes and standards for private housing.

COMPONENT 4: PROGRAM MANAGEMENT

This component will finance the following activities: (a) incremental operating costs of the Project Implementation Unit (PIU); (b) technical designs for the reconstruction and rehabilitation of infrastructure included under various Project components; (c) supervision quality control and contract management of reconstruction and rehabilitation of sub-projects; and (d) audit, studies and assessments required under various Project components. Budget for activities under this component is US$ 4 million.

2.2 Implementation Arrangements for the Project

The Government of Malawi will establish a dedicated PIU at central level to spearhead effective and efficient recovery planning and execution of project activities. The mechanism will also rely upon existing local government delivery mechanisms for implementation at the sector and community level. The overall implementation arrangements agreed for the MFERP are illustrated in the ensuing flow chart and further explained below.

Role of Department of Disaster and Management Affairs

The Department of Disaster and Management Affairs will provide advice on a programmatic, cross-sectoral framework of recovery interventions. Department of Disaster and Management Affairs will thus have an advisory role in guiding the PIU in the development and implementation of a Recovery Framework that will help towards coordinating and planning floods recovery in an integrated and cohesive manner. Department of Disaster and Management Affairs will thereby also serve as a convening forum and repository for multi-sector and programmatic recovery planning. However, it will not have a direct role in implementation or coordination other than for the execution of Component 3. Sectoral and line-department focal points may also be designated to ensure that an inclusive process that incorporates elements of bottom-up planning merge together with central policy precincts towards shaping a holistic framework for cross-sectoral and programmatic recovery.

The Department of Disaster and Management Affairs will head a technical inter-departmental Prioritization Taskforce (PT) to sequence and prioritize activities across and within various sectors. The task force will works closely with the Project Steering Committee (PSC) to solicit policy decisions from Government and communicate them to the respective implementing entities for the various project components.

Project Administration Structures

Five structures have been put in place for implementation of MFERP, and these are Project Steering Committee, PIU, Field Offices, District Councils and Project Management Committees. The roles of each of these structures are as follows:

a) *Project Steering Committee (PSC*): This will a principal decision-making body for the MFERP and will be the PSC chaired by Secretary to Treasury at Ministry of Finance and Economic Development (MoFED). It will be composed of representatives from the MoFED, MoAIWD, Ministry of Education, Science and Technology (MoEST), Ministry of Health (MoH), Ministry of Natural Resources, Energy and Environment (MoNREM), Ministry of Local Government and Rural Development (MoLGRD), Ministry of Transport and Public Works (MoTPW) (which includes the Roads Authority), Ministry of Lands, Housing and Urban Development (MoLHUD) and Department of Disaster and Management Affairs. This committee will provide oversight for project implementation as well as central policy guidance as required on a periodic basis. Department of Disaster and Management Affairs will act as the lead technical agency for the development of the Recovery Framework and sit on the PSC in an advisory role.

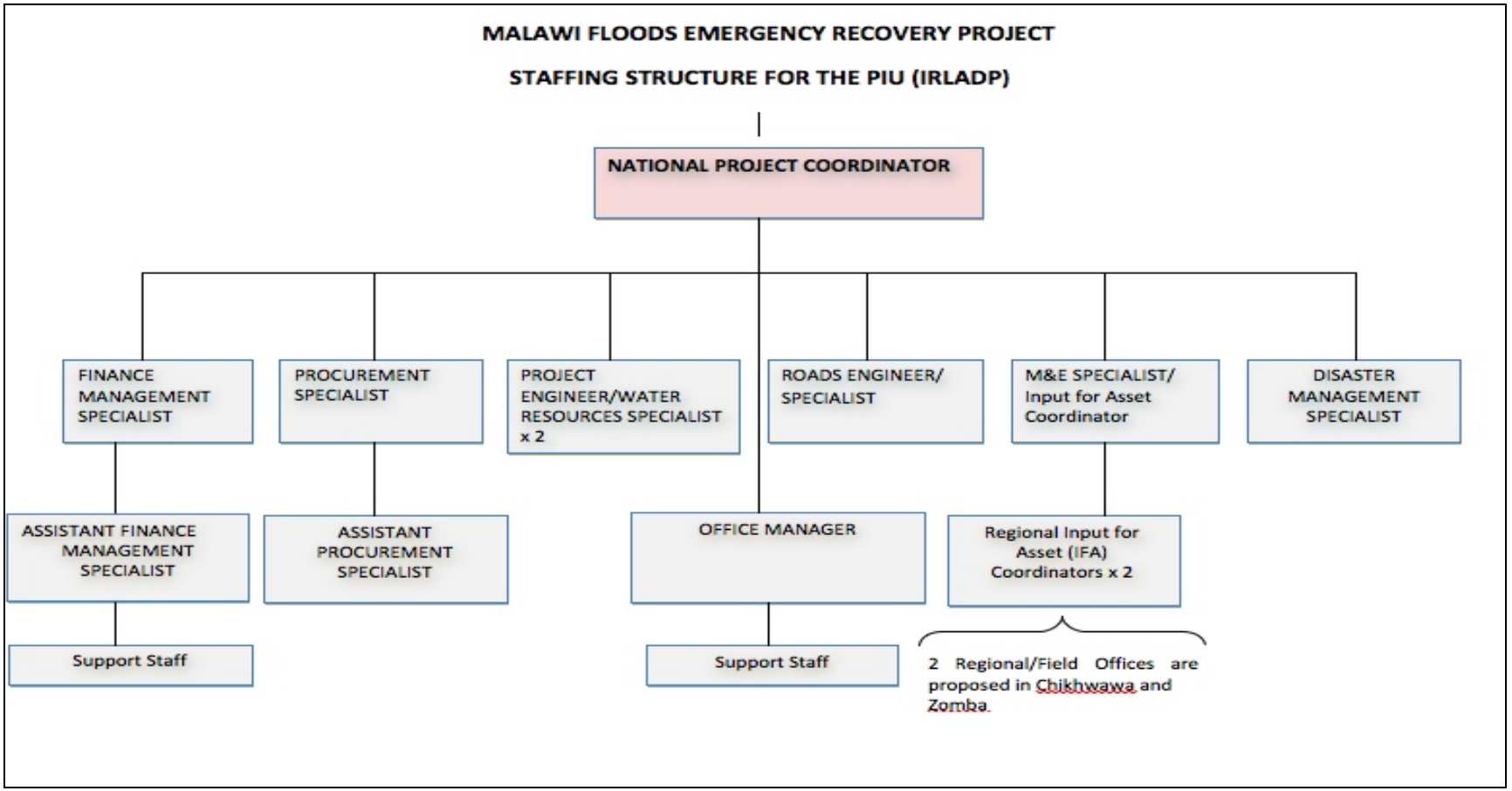
b) *Project Implementation Unit (PIU):* The PIU will be responsible for overall project management, which includes coordination across implementing agencies and ministries, financial management, centralized procurement, inter-ministerial reporting arrangements, quality control, social and environmental controls and monitoring and evaluation. Government has decided to transform the existing PIU for the Bank-funded Irrigation Rural Livelihoods and Agricultural Development Project (IRLADP) to a new dedicated PIU for the MFERP. The unit will be composed of contracted and will remain housed within MoAIWD.

c) *Field Offices*: The IRLADP PIU will have field offices in Chikwawa and Zomba, which are nearest to the most flood-affected areas in the Southern Region of the country. These offices will be staffed with regional Safeguard, Water Harvesting and Conservation Specialists to better support district implementation of the Project activities.

d) *Local Councils*. Local councils in all 15 flood affected districts will participate in implementation of labor intensive public works programmes and input for assets activities. Suitable staff such as Directors of Public Works , Director of Planning and Development, Community Development Officers, District Social Welfare officers, District Water Development Officers, District irrigation Officers will play critical roles in coordinating and supervision implementation of sub-projects at local level. Public Works Programmes and input for assets will be implemented through councils.

e) *Project Management Committees*: Project Management Committees are community based structures which are elected to supervise and monitor the participation of public works programmes or input for assets projects. The structure are operational in districts are utilized as vehicles for the on-going Malawi Social Action Fund social safety nets and inputs for assets projects. MFERP will utilize project Management Committees in the rehabilitation community infrastructures assets through Livelihoods Restoration and Food Security Component of the project.

Figure 1: Staffing Structure for the proposed Project Implementation Unit



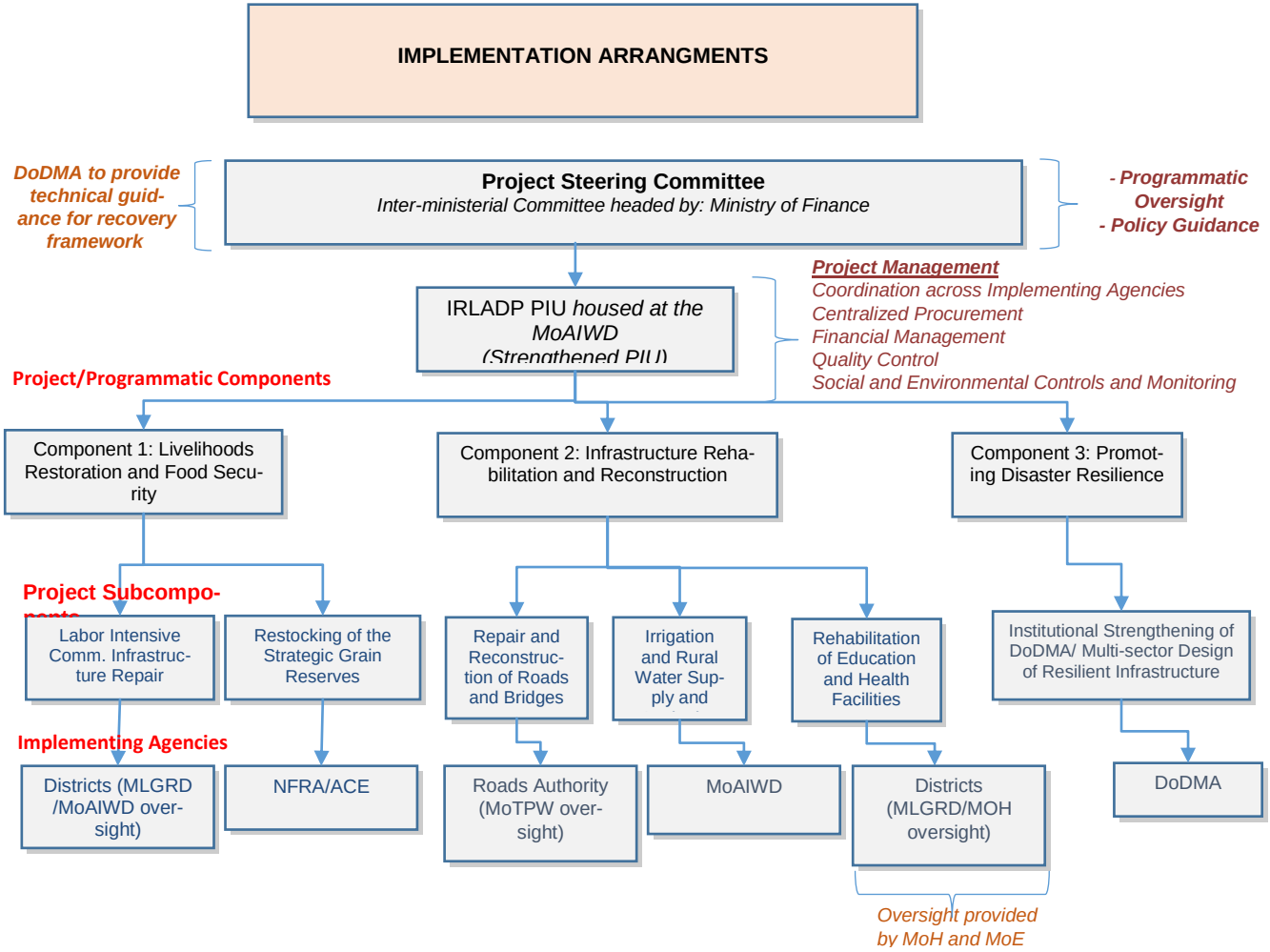
A number of government ministries/departments and agencies will be involved in the implementation of activities/components of MFERP. Each sub-project will be implemented at the line or district department level, overseen and guided by the relevant sectoral ministry. The table below summarizes the arrangements.

Table 1: Summary of Components and Implementation Arrangements

Components / Sub-components		*Functions of Component Implementing Agencies*
1)	**Livelihoods Restoration and Food Security**	
	1.1 Labor-Intensive Community Infrastructure Repair	The Districts will implement this sub-component under the oversight, coordination and guidance of the MLGRD.
	1.2 Restocking of the Strategic Grain Reserve (SGR)	MoAIWD and the NFRA will be responsible for various functions associated with the implementation of this sub-component.
2)	**Infrastructure Rehabilitation and Reconstruction**	
	2.1 Reconstruction and Improvement of Roads and Bridges	The Roads Authority under the guidance of the MoTPW will be in charge of the reconstruction and improvement of roads and bridges.
	2.2 Irrigation and Rural Water Supply and Sanitation	The relevant departments of MoAIWD, guided by the ministry, will be responsible for rehabilitating irrigation systems and rural water supply and sanitation schemes using third-party design and supervision engineers plus hired contractors.
	2.3 Water Resources Management	The relevant Department of Agricultural Extension Services and of the MoAIWD, guided by the ministry, will be responsible for implementing the interventions included under the water resources management sub-component. This builds on the technical guidance from the Flood Risk Implementation Service Provider hired under the MoAIWD as part of the coordination of the Shire River Basin Management Program.
	2.4 Rehabilitation and Reconstruction of Education and Health Facilities	The districts will implement this sub-component under the oversight, coordination and guidance of the MLGRD. The Ministries of Education and Health will provide technical guidance, particularly on quality and construction standards on a routine basis.
3)	**Promoting Disaster Resilience**	
	3.1 Institutional Strengthening of Department of Disaster and Management Affairs	Department of Disaster and Management Affairs will be responsible for undertaking or contracting the activities included under this sub-component.
	3.2 Multi-sector Design of Disaster Resilient Infrastructure	Department of Disaster and Management Affairs will be responsible for undertaking or contracting the activities included under this sub-component.
4)	**Program Management**	
	The MFERP PIU will be responsible for overall project implementation, management and coordination, as well as also other activities included under this Project component	

The flow chart overleaf outlines the linkages in the implementation of project activities across government structures.

Figure 2: Implementation Arrangements



Local Participation and Implementation at District and Local Level

The Government of Malawi has incorporated the participation of local councils and communities in implementation of sub-projects in all districts affected by floods. Participation of communities will be critical in enhancing delivery of benefits of the projects but at the same time it will promote local contribution to project activities and ownership of assets.

Within the affected districts, the District Executive Committee will appoint a technical committee with staff drawn from technical services housed within the respective district administration offices, such as public works, forestry or land resources. The selection of staff will depend on the assets being constructed or rehabilitated (such as schools or bridges). The committee will oversee the technical appraisals, detailed costing and technical inputs during implementation. These activities may be contracted out to a qualifying NGO in districts where there are significant constraints on staff resources.

Initial identification of sub-projects for support will be initially chosen by local communities. An assessment of the technical feasibility of the proposed asset to be developed under the input for asset (IFA) program will be undertaken by staff from the relevant technical service, including desk and field studies and the preparation of detailed costing. The appraisal will include confirmation of the community's commitment to constructing or rehabilitating the asset and ensure that it represents one of the priority interests of the majority of the affected population within the project focal area. The assessments are to be verified by field-based staff from the MFERP PIU.

At community level, Project Management Committee (PMC) will be democratically elected by the communities in the targeted areas to implement the component activities. The members will be residents of the area and chosen for their leadership qualities. The PMC will have at least ten members of whom at least 50 percent will be women. The holders of the principal positions must be numerate and literate. The membership of the PMC is voluntary and committee members will not receive remuneration. Keeping with the current practice in Malawi, village or group heads would not be members of the PMC. The role of the PMC is four-fold:

- To oversee the selection of workers using the relevant criteria;
- To supervise the works;
- To endorse the labor register for the preparation of voucher payments;
- To oversee the distribution of vouchers to workers.

Once the component-specific activity tasks are quantified in detail, the number of local laborers required to complete the work within the given timeframe are estimated. People within the disaster affected areas will be informed about the nature of the work, duration, form of remuneration and criteria that will be used to select beneficiaries. If they are interested in being considered for such employment, they will be informed of where, when (time and date) and with whom (for example, the PMC) they may register their interest. The PMCs will prepare a list of qualifying laborers.

The responsibility for the overall execution of the tasks lies with the foremen/women, the workers' committee and the PMC. Technical oversight will be provided by the district technical services / NGO and the contractor (if hired). The work norms will conform to agreed standards. The system will also be flexible to accommodate short periods of workers' non-availability. Upon the completion of work, an asset management committee will be formed to take over formal responsibility for operating and maintaining the asset.

2.3 Project Alternatives

The purpose of this section is to explore alternative project options which if adopted could minimize occurrence of negative environmental and social impacts. In addition, the section also identify and assess potential "within project" alternatives. This concept "within the project alternatives" relates to innovative options other than conventional strategies to improve project construction and implementation methodologies. The following paragraphs highlight the various alternatives considered.

Consideration of "No Project" Option

The "No Project" scenario entails that the MFERP be abandoned altogether. The 15 flood affected districts would to be left unattended and remain in its current desolate situation. Some of the environmental disadvantages would be the following:

a) The flood displaced people (about 336,000) would remain in overcrowded and insecure camps with no food, clothes and livelihood systems. This would be unacceptable socially.
b) Damaged roads and bridges will remain in disrepair and continue to constrain transport and communication in flood affected districts.
c) Damaged irrigation schemes would be unable to produce food for the displaced people due to lack of irrigation facilities.
d) Flood affected water supply facilities would remain unusable and disruptions of water supply would deprive local people of potable/safe water. The consequences would be outbreaks of water borne diseases.

However, the main advantage of the "No Project" option is that predicated negative externalities highlighted in Section 6 of this document would not occur.

The alternative of "No Project Option" would deprive flood-affected Malawians in the 15 districts the right to economic development and to a decent environment. This means that these options would not achieve socio-economic benefits to Malawi, and is therefore unacceptable option. The appropriate option is to implement the project within the 15 flood affected districts with integration of environmental mitigation measures recommended in the environmental and social management plan, Tables 7-9 in this document.

Alternative construction materials for rehabilitation school blocks and health centers

Potential construction materials which could be used in rehabilitation of damaged school blocks and health centers are local burnt bricks, and cement bricks. The two options were chosen for consideration because of known previous experiences and current use in a number of constructions works. The environmental advantages and disadvantages of the two options are summarized as follows:

i. Locally produced burnt bricks. Except for a few bricks which are made by specialized companies in urban areas, most bricks extensively used in construction industry in Malawi are locally made from clay mortar. Bricks are normally fired by wood, and much of this firewood is locally sourced. With an increase in demand, the production of burnt bricks exerts serious negative impacts on trees and land resources. Despite these problems, burnt bricks are popular because of a number of factors, one being the low cost of production and purchase of bricks as they are made from locally available resources in most parts of the country.

ii. Cement bricks are made from a mixture of cement, sand and water by a specialized made machine. The manufacture of any reliable and structurally sound cement bricks is done by trained skilled people who can follow standards. The cement bricks are used right way after drying the blocks. The technology is considered expensive to local communities or small scale contractors due to high initial capital costs related to purchase of machines, cement and specialized training requirements for production staff.

This study has reviewed the overall environmental advantages and disadvantages of both burnt bricks and cement bricks. Cement bricks are recommended as main construction materials for new school blocks and health centers. The reasons are: the use of cement bricks would utilize cement and sand which are readily available in flood affected districts. Cement bricks would not require use of firewood as is the case with burnt bricks. The other reasons are that cement bricks do not use more water in production. In brief the use of cement bricks would reduce use of firewood (and hence reduce pressure on forest resources) and also reduce consumption of water in production.

Alternatives sites/design of public schools and health centers

Schools and health centers reported to have been damaged by floods are located in known flood prone areas especially in Nsanje and Chikwawa districts. In this regard, in order to minimize future losses of the structures, the recommended option is to relocate the site of school blocks and health centres in safer upland sites. Safer upland sites would guarantee durability and long term use of new classroom blocks and health centres.

However, in case there are no suitable alternative sites for new schools and health centers, the recommended measure is to adopt disaster resilient building designs of new school blocks and health centres. Some of the features of the new design include: construction of higher and thicker cement based foundations (690 millimetres), and construction of raised flood protection embankments around the school premises.

Construction of flood resilient roads and bridges.

Priority roads for rehabilitation and re-construction are secondary roads which are S151 and S152 in the Lower Shire in Chikwawa and Nsanje districts. The roads are on the East Bank of the river and have been damaged quite extensively. These roads are routinely washed away during the rainy seasons, and maintenance has been quite expensive over the years. Bridges are quite narrow and road carriage ways are built at lower levels along hills and escarpments. Due to this lower sitting, the roads are quickly flooded by water and siltation from hills and escarpments during rainy season.

The proposed rehabilitation of the road network will follow the “Build Back Better” approach to minimize damages from future flood risks. Measures include (i) raising the embankment height to protect the main pavement structure from recurrent flood waters; (ii) embankment protection works along the road; (iii) reinforced sub-based layers with improved construction materials to avoid water induced damages; and (iv) improved designed and raising of drainage structures such as bridges, culverts and drifts. The environmental justification of alternative measures are to enhance durable road with minimal risks of damage and siltation from recurrent flooding in the area.

3. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

3.1 Policy Framework for Preparation of Environmental Impact Assessments

Over the years, Malawi has taken considerable strides in integration of environmental policies in development programmes with the aim of promoting and consolidating sustainable socio-economic development in the country. Some of environment related policies include: the National Environmental Action Plan, the National Environmental Policy, the Malawi National Land Policy, the Environmental Management Act, Occupational Health, Safety and Welfare Act, Town and Country Planning Act, and Local Government Act among others. Section 4.1.1 below provides an overview of policy framework for preparation of environmental impact assessment for prescribed projects in Malawi. This consideration has been necessary because the project has to observe the requirements of the various policies of the government in planning and implementation.

National Environmental Action Plan (NEAP)

Malawi prepared National Environmental Action Plan (NEAP) as a framework for integrating the environmental planning into the overall socio-economic development of the country through broad public participation. National Environmental Action Plan (NEAP) highlights key environmental issues that need to be addressed which include soil erosion; deforestation; water resources degradation and depletion; threat to fish resources; threat to biodiversity; human habitat degradation; high population growth among others. NEAP also provides guidelines actions to be taken by stakeholders such as local communities, government, agencies, non-governmental organizations and donors in environmental planning and management.

National Environmental Policy (NEP)

National Environmental Policy (2004) is based on the principles of National Environmental Action Plan, and provides broad policy framework on environmental planning in development programmes including undertaking environmental impact assessments for prescribed projects. The overall goal of National Environmental Policy is the promotion of sustainable social and economic development through the sound management of the environment in Malawi. The policy seeks to meet the following goals:

- secure for all persons resident in Malawi now and in the future, an environment suitable for their health and well-being;
- promote efficient utilization and management of the country's natural resources and encourage, where appropriate, long-term self-sufficiency in food, fuel wood and other energy requirements;
- facilitate the restoration, maintenance and enhancement of the ecosystems and ecological processes essential for the functioning of the biosphere and prudent use of renewable resources.

The National Environmental Policy has implications on the proposed MFERP in the 15 flood affected districts. Potential negative impacts would be loss of trees, increase of soil erosion from land leveling and lose soils, sewage discharge, groundwater pollution from oils from leakages from construction vehicles among others. As a requirement under the environmental policy, the project will require to upstream adequate measures for protection of soil from erosion. It will be necessary therefore that an appropriate environmental

management plan will have to be implemented during implementation and operation of new irrigation schemes, new schools blocks, new health centres among others.

3.2 Administrative Framework for Environmental Impact Assessments

In Malawi, Environmental Affairs Department in the Ministry of Natural Resources, Energy and Mining provides an administrative framework for environmental impacts assessments for prescribed projects. The department is based in Lilongwe, and is led by Director of Environmental Affairs who is assisted by a number of professional and administrative officers.

Environmental Affairs Department is supported by a Technical Committee on Environment, a multi-sectoral committee set up under Environment Management Act. It provides expertise advice to Environmental Affairs Department on a wide range environmental matters including scrutinizing environmental assessments for projects. It provides professional opinions and makes necessary recommendations to the Director for appropriate action.

The Director for Environmental Affairs makes further recommendations on environmental impact assessments to the National Council on Environment (NCE) in the Ministry of Natural Resources, Energy and Mining for final consideration. The National Council on Environment is a policy making body and is made up Permanent Secretaries of government ministries and selected parastatals. The National Council of Environment (NCE) provides policy guidance and recommends decisions on environmental impact assessment reports to the Minister responsible for environmental matters. The Department of Environmental Affairs provides secretarial services to both the Technical Committee on Environment and the National Council on Environment

3.3 Legal Framework for Environmental Impact Assessment

Environment Management Act (60:02), 1996.

In Malawi, Environment Management Act, 1996 provides the basic legal framework for environmental planning including the preparation of environmental impact assessments for prescribed projects. The Environmental Management Act, 1996 is administered by the Director for Environment Affairs in the Environmental Affairs Department of the Ministry of Climate Change Management and Environment Affairs. The law covers specific responsibilities and duties for various public authorities in the environmental planning and management.

Section 9 sets out the powers and functions of the Environmental Affairs Department and duties of the Director of Environmental Affairs. The duties include spearheading environmental planning and monitoring in the country.

Section 10 of the Environment Management Act has provisions for the establishment, powers and duties of the National Council on Environment (NCE). The National Council on Environment is a policy making body which advises the Minister and the government on all matters regarding mainstreaming of environmental planning and management in public and private sector projects. The council is composed of Principal Secretaries of government ministries and selected senior executives of parastatals such as Malawi Bureau of Standards, National Herbarium of Malawi and University of Malawi. Its role includes overseeing the mainstreaming of environmental issues in socio-economic development programmes, overseeing the processing of environmental impact assessments for projects

in Malawi. The National Council on Environment meets at least four times a year to deliberate matters.

Section 16 of the Environment Management Act has provisions for the establishment, the powers and duties of an inter-agency Technical Committee on Environment (TCE). The Technical Committee on Environment is composed of multi-disciplinary professionals. It acts as a technical arm for the Department of Environmental Affairs which provides technical expertise and professional recommendations on matters of environmental planning and management including environmental impact assessment of projects. The Technical Committee on Environment (TCE) meets at least six times to scrutinise and review environmental impact assessments for projects and programmes as well as other matters. The Director of Environmental Affairs provides secretarial services to the Technical Committee on Environment on its operations.

Section 24 of the Environmental Management Act outlines the steps to be followed in the preparation of project briefs of projects which would require environmental impact assessment .Project briefs are the documents for appraisal of projects to determine whether or not environmental impact assessment would be required for particular projects.

Section 26 (3) of the act specifies that any project subject to environmental impact assessment cannot be issued with a licence by any licensing authority in Malawi for implementation until a satisfactory impact study report is approved and a certificate is issued by the Director of Environmental Affairs.

3.4 Guidelines for Environmental Impact Assessments (EIA) in Malawi, 1997

In line with section 24 of the Environmental Management Act, the Government of Republic of Malawi produced a set of Guidelines for Environmental Impact Assessment (EIA) in Malawi in 1997.The principal use is to facilitate the procedures, steps in mainstreaming environmental planning and management in all development programmes. The guidelines are used by government agencies, project developers, donors and the general public in their project planning processes. The aim of the guidelines is to integrate environmental concerns into national development strategies for all types of projects, in both the public and private sectors. The guidelines outline specific roles for institutions in managing environmental impact assessment, the mechanisms for integrating in project planning ; provide a list of prescribed projects that *require* an EIA (List A on pages 25 to 29) and a list of projects that *may require* an EIA (List B on pages 30 - 31) in all sectors. In case of the MFERP, sub-projects are prescribed under various sections. Sections A13.4 and A13.5 prescribe projects implemented in flood prone areas. Section A1.2 prescribes new irrigation schemes or rehabilitation of irrigation schemes over 10 hectares in size. The guidelines also provide a framework for the format and structure of the environmental impact assessment reports in order to adequately articulate environmental planning responsiveness.

Both the Environment Management Act (EMA**)** and the Guidelines for Environmental Impact Assessment in Malawi have implications on the proposed project. The first is that the proposed project falls under prescribed list as required under the guidelines and as such the proponent has to comply with the preparation of an impact assessment as required under section 25 of the Environment Management Act. This is necessary so that the proponent prepares a comprehensive environmental management plan for mitigating potential risks during construction and during operation.

3.5 Review of Other Relevant Policies and Laws Applicable to the Project

The National Irrigation Development Policy (1999) and Irrigation Bill

The National Irrigation Development Policy and Strategy (NIDOS) advocates among others the promotion of sustainable irrigation development systems, which can adequately contribute to increased agriculture production in the country with minimal degradation of water resources and the environment. The policy highlights that some constraints to Malawian farmers to further irrigation development that include inadequate access to appropriate technologies/equipment for land reclamation and expansion, and inadequate trained personnel in irrigation technologies.

Irrigation Bill provides guidance on development and management strategies of irrigation farming and water utilization in Malawi, aspects on protection of the environment from irrigated related degradation, establishment of National Irrigation Board. The focus of the bill is to guide sustainable irrigation development so as to enhance the production of food crops as well as cash crops in the country for domestic needs as well as international markets. The bill seeks to enhance an enabling regulatory framework and development environment for the farmers, private sector, donors and government.

With respect to environmental issues, both the policy and the bill stipulate the need of environmental impact assessments prior to implementation for all large scale and medium scale irrigation projects in Malawi. The requirement is necessary in order to identify in advance serious detrimental impacts which must be avoided and minimized during project implementation. Activities under MFERP would have some negative impacts if mitigation measures are not put in place. Significant impacts related to irrigation policy would be from irrigation schemes. Examples include soil erosion and siltation; salinization of soils from agro-chemicals, spread of invasive plants, spread of pests and diseases at irrigation schemes. It is therefore necessary that the rehabilitation and re-construction of irrigation schemes complies with the National Irrigation Development Policy Strategy and Irrigation Bill by incorporating an appropriate environmental management plan in implementation and operation of the estate.

National Disaster Risk Management Policy (2015)

The policy provides an integrated and coordinated disaster risk management system aimed at preventing or reducing the risk of disasters, mitigating the severity of disasters. The policy also outlines measures towards emergency preparedness, rapid and effective response to and management of disasters and post-disaster recovery; the establishment of a more effective institutional framework for disaster risk management in Malawi. The objectives of the policy includes:

a) To ensure the sustainable reduction of disaster relate losses in lives and the social, economic and environmental assets of communities in Malawi;
b) To uphold the constitutional rights to life, development and property by addressing the root causes of vulnerabilities to disasters, strengthening the country's institutional capacity for disaster risk reduction and management and building the resilience of communities to disasters;
c) The establishment of a more effective institutional framework for disaster risk management in Malawi.

The policy advocates integration of environmental conservation and planning as some of effective long term measures of checking climate change and reducing natural disasters in Malawi.

Local Government Act (1998)

Local Government Act provides legal mandate for local councils in the planning, administration and implementation of various issues and development programmes in their respective geographical districts. One main function of the councils is that of local environmental planning and management .Some of the environmental management functions are provided in section 2 of the second schedule of functions of the council outlined in Local Government Act. These include town planning, building control, local afforestation programmes, control of soil erosion, and appropriate management of solid and liquid wastes.

Local councils in the 15 flood affected districts will implement public works programmes in collaboration with project management committees.

In addition, contractors for roads and bridges will have to collaborate with councils on undertaking HIV/AIDS interventions on construction sites, undertaking HIV/AIDS sensitization to mobile construction workers during construction phase.

Disasters and Relief Act (1991)

Disaster and Relief Act (1991) is mandate the Department of Disaster Management Affairs to coordinate the management of all disasters in Malawi. The act outlines steps to be followed to identifying disaster affected people, registration of affected people, distribution of relief items and monitoring the restoration of livelihood systems.

In district councils, the responsible officers for coordinating management of disasters are District Commissioners and Assistant Disaster Officers. The implication of this act to relation to the MFERP is that the distribution of relief food to be procured under this project will be coordinated by Department of Disaster Management Affairs in collaboration with World Food Programme.

National Water Policy (2005) and Water Resources Act (2013)

The Government of Malawi has a National Water Policy with the aim of providing a comprehensive and integrated water resource conservation and management within the country. The Ministry of Water Development and Irrigation is responsible for the coordination of water policy issues which include: protection of water resources, water resource planning and development, review of applications for water abstraction and water quality management including control of pollution.

The principal statute which regulates water resource use, protection and conservation is the Water Resources Act (2013). The administration of these responsibilities rests with The National Water Resources Authority. The Water Resources Act (2013) is the legal framework for the establishment, powers and duties of the National Water Resources Authority. This is a policy making body which advises the government as a whole on all matters regarding water resource protection, abstraction and conservation. Its role includes overseeing the processing of applications for water rights and monitoring water abstraction. Section 88-89 outlines measures and restrictions to access to water, to abstractions and interferences in water flows, to pollution of water in public water resources by people or companies. It is a requirement by people or companies who want to use water other than domestic uses by local people to apply for permission from National Waters Resources Authority before abstraction.

National Water Policy advocates for sustainable management of catchment and riverine areas in order to minimize soil erosion and siltation of river courses. Siltation of river courses is one of cause of floods in Malawi. This is because shallow river causes overflows and destroys properties along the flood plains.

There are a number of implications of National Water Policy and Water Resources Act (2013) related to the proposed project. First, the contractors may need to abstract water from rivers during construction/compaction of access roads and car parks. In this regard, contractors will have to apply for water rights abstraction from National Water Resources Authorities. The second implications relate to connection of sewer line to existing sewerage systems of the colleges.

Public Health Act (1966)

Public Health Act provides legal framework on planning and management of a wide range of health related issues including environmental health, occupational health and solid wastes management.

Section 87 of Public health Act stipulates the need for proper drainage works for new buildings. The drainage works have to be designed so as to carefully drain out storm water and sub soil from building sites and cartilage. Section 88 stipulates the requirements for separate toilets for both female and male persons in public buildings or buildings which would be used by both male and female employees. All new facilities and rehabilitated will be provided appropriate number of toilets for their male and female employees.

There are two implications in relation to the proposed project, and these are: the provision of appropriate toilets and provision of proper storm water drains around new classrooms and health centres. First, the development plans for project has to include provisions of drainage works and provision for adequate toilets for both female and male pupils in schools. Secondly, contractors will have in place adequate temporary toilets for both female and male workers during construction period.

Occupational Safety, Health and Welfare Act (1997)

The act provides regulatory mechanisms to ensure safe and secure work places in Malawi. Under section 6 and 7 of this act, all work places (be it construction sites) require “work place registration certificate” from the Director of Occupational Safety, Health and Welfare in the Ministry of Labour and Vocational Training. General safety facilities stipulated for most work places include the following: adequate ventilation, cleaning materials and cleanliness of workplaces, lighting, washing facilities, change rooms for some workers, sanitary conveniences and first aid kits. Both employers and employees are sensitized on basic procedures for proper use and operations of the welfare and safety facilities within work places. Non – compliance or negligence on use of work safety facilities is an offence under Sections 82 and 83 of the act. Penalties include a fine of up to MK200,000.00 and 12 months imprisonment of the offenders.

Sections 56 and 57 provide guidelines for prevention fire out breaks, and control of incidences of fire outbreaks within work places. Section 57 stipulates some recommend means of fire escapes from work places such as s and offices. These have to be properly labeled with red letters and kept free of obstruction at all times Examples are *emergency escape door and emergency assembly points.*

Section 58 stipulates the provisions of protective clothing (such as gloves, foot wear, screens and gaggles, ear muff and head covering) to protect workers from excessive exposure to nuisances with some work activities. And section 59 stipulates the provisions for

breathing masks to employees against excessive emissions of dust and fumes. Such incidences are common with construction sites and within large kitchens.

Some of the implications from the Occupational Safety, Health and Welfare Act for consideration in the construction site of the project are as follows:

- Registration of the construction sites (during rehabilitation and reconstruction works) by the contractor as "work place" in line with Sections 6 and 7 of the Act;
- Provision of necessary work place environmental health safety measures within construction sites. These could be sanitary facilities, washing rooms, change rooms, first aid kits and cleaning materials;
- Provision of protective clothing to construction workers and irrigation workers (during application of pesticides) in situations of exposure to risks. Examples are overalls, work suits, helmets and gloves;
- Installation of adequate measures for prevention and management of fire outbreaks within construction site and the project premises as specified under Sections 57 - 58 of the Act.

The Pesticide Act, 2000

Pesticide Act provide legal and administrative framework for registration, procurement, distribution, export, importation, storage, usage and disposal of the pesticides and related materials. The administrative work is done by the Pesticide Control Board which is established under section 10 -11 of the act. Main duties include: processing registration of pesticides and subsequent issue of certificates and permits for procurement, importation, export,, storage distribution, usage and safe disposal of pesticides. The other duty is to provide public campaigns on proper usage, storage, importation, export, sate disposal of pesticides in Malawi. By and large the provisions of the pesticide act are intended to minimize the potential adverse effects from pesticides to the people or non-target species and the environment in general.

For the rehabilitation of irrigation schemes, the Act therefore requires:

i. A license to be obtained from Pesticide Control Board for approval and registration of the potential pesticides to be used at the estate. This is necessary so that the board can screen them, and recommended whether the proposed agrochemicals are acceptable for use in Malawi, and whether or not they safe for use in Malawi.
ii. Adequate facilities and mechanisms to be put in place for storage and usage of the pesticides at the estate. The Pesticide Board will have to inspect and certify about the security of the facilities for storage of the pesticides.
iii. Training of designated workers in best practices in storage and packaging of the pesticides, appropriate usage of the pesticides so as to minimize misuses and eventual accidents.

National HIV/AIDS Policy (2012)

The National HIV and AIDS Policy (2012) highlights that HIV/AIDS impact on the country is quite significant and affects a range of socio-economic activities be it in agriculture, fisheries, public sector, private sector, tourism, urban areas, rural areas among others. National HIV/AIDS Policy identifies migrant workers (mobile population) and women among those highly vulnerable people to transmission of HIV and AIDS and other sexually transmitted diseases. Sub–projects under MFERP will encourage the movement of migrant workers. The implication is that some single male migrant workers would be at increased likelihood of contracting HIV and AIDS in the

project area. Increased disposable income among migrant workers may lead some workers to indulge in extra–marital affairs will either local girls or married women within surrounding villages. These sexual activities would increase the spread of HIV and AIDS among workers and local people. In order to minimize risks, this study recommends the following mitigations measures:

a) Periodic distribution (and training in use) of both female and male condoms to workers.
b) Periodic HIV and AIDS sensitization meetings for workers.
c) Development of HIV and AIDS Work Place Policies for sub-projects.

National Gender Policy (2000)

The National Gender Policy (2000) is under review. The current policy calls for integration of gender responsiveness in planning and implementation of development projects and programmes. Consideration of gender needs and benefits will enhance poverty reduction in both rural and urban environments. The proposed development and operation of the sub-projects have to integrate consideration of needs of women, men, boys and girls. Some of potential considerations could be the following areas:

a) Consideration of both displaced men and women in employment opportunities at public works programmes and input for assets - in order to enhance income for both men and women.
b) Contractors to consider both qualified men and women for work in labor intensive tasks during construction of roads, bridges and irrigation schemes.
c) Provision of condoms for both female and male workers. This arrangement would empower both men and women to reduce risks of contraction of HIV/AIDS and sexually transmitted diseases during construction and operation phases of the airport.

Some of these recommendations have been incorporated in environmental management plan and are outlined in Tables 7-9 in Chapter 7 of this document.

National Parks and Wildlife Act (63:01)

The National and Wildlife Act (Amendment) number 11 of 1992 focuses on sustainable protection and management of wildlife and their environment. The act stresses the conservation of environment in National Parks and Game Reserves through among others the following specific strategies : preservation of selected examples of Malawi's biotic communities and the their physical environment; interest, preservation of population of rare , endangered and endemic species of wild plants and animals, assist in maintaining water supplies through catchments conservation.

The 2015 floods in Malawi have affected some national parks and game reserves. These are Liwonde National Park, Lengwe National Park and Mwabvi Game Reserve. MFERP will be implemented in proximity of some of these protected wildlife conservation areas such as Lengwe National Park, Mwabvi Game Reserve and Elephants Marshes - where there are abundant wildlife

Potential negative risks from activities of MFERP would be the following: instigation of poaching of wildlife for ivory and bush meat by migrant workers (contractors); enhancement of illegal fishing within Mwabvi Game Reserve, Liwonde National Park and Lengwe National Park. Another potential negative impact would be increase in extraction of firewood and charcoal by local people due to increase in demand by migrant workers in flood recovery activities. Potential mitigation measures have been incorporated in recommended

environmental and social management plans of various components of the projects, Tables 7-9 in Chapter 7 of this document.

The Malawi National Land Policy

The Malawi National Land Policy focus on land as a basic resource common to all people of Malawi and for enhancement of socio – economic development. Section 4.11 affirms equitable access to land to all citizens of Malawi. The policy recognizes human settlement and agriculture as the major benefactor land use sector. As such, the policy advocates for orderly resettlements of villages or households especially in rich agricultural zones. Furthermore the policy guarantees full legal protection to customary land tenure to the people of Malawi in order to enable the ordinary Malawians adequately participate in subsistence farming and socio-economic development activities. The Malawi National Land Policy also advocates for fair compensation on open market value to local people on all classes of land (whether held under customary land tenure or leasehold) in case such land is acquired for public interest or for development of public infrastructure. In reference to relocation of displaced people, the policy advocates adequate consultations with the affected people so that their interests are taken care of. Such provisions will have to be made in case of land acquisitions for some sub-projects under the MFERP, for example where land is to be acquired for new schools, new road diversions or new bridges.

Land Act and Land Acquisition Act

Land Act covers land tenure and land use quite comprehensively. Sections 27 and 28 of the act guarantees landholders for appropriate compensation in event of disturbance of or loss or damage to assets and interests on land Act also provides procedures of acquisition of one class of land to another. The process begins with appropriate notice to the existing lessee of the land. The PIU has to ensure that acquisition of land for new schools to be built (in safer places) in Nsanje and Chikwawa follows procedures as required by Land Act.

Land Acquisition Act covers procedures relating to the acquisition of land by either the government or individuals or developers from any form of the land tenure systems in Malawi. The act makes provision for preliminary investigation, preliminary survey of the area and the procedure to be followed where land should be acquired. The procedure for land acquisition starts with issue of a formal notice to persons who have existing interests in the land. Such notices are issued under section 6 of this act. Sections 9 and 10 of the act covers the steps for assessment of land, crops, fruits and other landed properties and subsequent procedures for payments of the compensations to the displaced people. Section 11 to 14 outlines the necessary steps for land surveying and land transfer following notices in government gazette. The responsibility of identifying alternative land for those affected people rests with their village headman, their traditional authority and District Commissioner of the district. The District Commissioner assists in transportation and provisions of necessary services on new sites of resettlement.

Implications for the law on the project include land acquisition for new schools and health centres and potential risks of movement of people from some sites (for example as a result of construction of new road diversions). The PIU and district councils must ensure adherence to Sections 6-14 of Land Acquisition Act.

Town and Country Planning Act

The Town and Country Planning Act, is a principal act for regulating land use planning and physical developments in Malawi. The aim of regulating land uses and location of physical developments is to enhance orderly spatial physical growth of human settlements activities. In addition the laws promotes orderly physical planning in order to enhance optimum use of

land and service infrastructures, protect and conserve fragile environmental systems in space. These objectives are achieved by guiding physical developments, and controlling building uses in designated zones with regulated planning permissions. Section 40 basically prescribes environmental and socio-economic screening for medium to large scale development projects before they can be granted planning permissions under this act. Normally this screening is undertaken by local councils and developers of proposed large projects before they can be sanctioned under this act. Examples of large scale projects which require environmental a and social assessment will be re-construction of Thabwa – Masenjere – Fatima Road, rehabilitation of water supply schemes, rehabilitation of irrigation schemes among others.

3.6 Review of World Bank Safeguard Policies and Implications

Preliminary appraisal of the project on safeguards policies has been made, and results of implications are summarized in Annex 2. Results indicate whether and how the project activities trigger one of these policies. Those policies which have not been triggered have been indicated.

Rehabilitation and re-construction activities under MFERP have triggered four World Bank Safeguards Policies, and these are: Operational Policy 4.01 (Environmental Assessment), Operational Policy 4:09 (Pest Management), Operational Policy 4:11 (Physical Cultural Resources) and OP4.12 (Involuntary Resettlement) and Operational Policy 7.50 (Projects on international Waterways). Proposed rehabilitation and re-contraction of roads, bridges, irrigation schemes, and water facilities have potential of some negative impacts. The project has been rated under category B of Operational Policy 4:01 (Environmental Assessment). The appraisal under category B of Operational Policy 4:01 (Environmental Assessment) entails that potential environmental and social impacts would have moderate significance in the environs, and there is need of environmental management plans to address the impacts. The main sources of impacts would be from expansions and rehabilitation works of the facilities at various campuses of both public and private colleges. All of the identified negative impacts can be reduced or in some cases avoided, with timely implementation of the mitigation measures outlined in this report.

Environmental and Social Screening of all sub-projects will be undertaken during planning and design stage, before commencement of civil works on the site. Environmental and social management plans will be prepared to address all potential negative impacts. Resettlement screening exercise and/or Resettlement Action Plan will also be carried out in line with requirements of Resettlement Policy Framework. Resettlement screening guide measures to address social and economic impacts on project affected people.

Operational Policy 4:01 (Environmental Assessment)

The objective of Operational Policy 4:01 (Environmental Assessment) is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and mitigation of their likely environmental impacts. This policy is triggered if a project is likely to have potential adverse environmental and social impacts in its area of influence. The construction and rehabilitation of various types of sub-projects under MFERP are likely to have some adverse environmental and social impacts, which will require mitigation. In order to comply with this safeguard policy, all implementing institutions will need to:

a) Carry out environmental and social screening of sub-projects using a screening form attached in Annex 3. The screening process will be done to appraise environmental and social risks and identify potential mitigation measures in advance.
b) Prepare Environmental and Social Management Plans (ESMP) for individual sub-projects. ESMPs will guide the implementation of mitigation measures where need be.
c) Annex 5 includes a sample Chance Find Procedure to manage accidental discoveries of the physical cultural resources within the projects. These procedures will need to be incorporated into civil works contracts.

Physical Cultural Resources (OP 4.11)

The project activities will not be located on or in proximity to known physical cultural resources such as cultural artifacts, graves, shrines among others. In case such artifacts are discovered during soil excavation during the construction/rehabilitation of classrooms, proper procedures, as outlined in the Chance Finds Procedures, are to be followed to preserve such physical cultural resources. Annex 5 provides a Sample Chance Find Procedure to be followed in case of encounters on physical cultural resources.

Involuntary Resettlement (O.P.4.12)

The objective of Operational Policy 4:12 (Involuntary Resettlement) is to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs. Furthermore, it intends to assist displaced persons in improving their former living standards; it encourages community participation in planning and implementing resettlement and in providing assistance to affected people, regardless of the legality of title of land. This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in: relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood, whether or not the affected people must move to another location.

A Resettlement Policy Framework (RPF) has been prepared for the MFERP project. The RPF outlines the principles and procedures to be applied in the event that any sub-project involves land acquisition and thus requires the mitigation of potential adverse social impacts. Where there is land acquisition, impact on assets, and/or loss of livelihood, the RPF guidelines must be followed and a RAP completed prior to sub-project implementation. For the MFERP, land will be acquired for new sites for school blocks and irrigation canals (diversion canals), road diversions, and possibly bridges. Where there are differences between Malawi's legislation and the Bank's operational policy, the latter prevails for the duration of project implementation.

Pest Management (Operational Policy 4.09)

MFERP will support rehabilitation of damaged irrigation schemes in 15 flood affected districts. These activities would trigger Pest Management Operational Policy (OP 4.09) in that the operations of the schemes would enhance uptake of various types of pesticides. This policy covers the procurement and use of pesticides on bank funded or bank supported project. The procurement of any pesticide in a Bank-financed project is contingent on an assessment of the nature and degree of associated risks, taking into account the proposed use and the intended users. The following criteria apply to the selection and use of pesticides in Bank-financed or bank supported 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.
d) The methods, timing, and frequency of pesticide application must aim to minimize damage to natural enemies.

An integrated Pesticide Management Plan has been prepared to support sustainable means of management of pests and diseases on irrigation schemes. Some measures include use environmentally safe pesticides and use of biological means for control of pests and diseases as opposed to use of pesticides.

4. ENVIRONMENTAL AND SOCIAL SETTING OF PROJECT AREA

Malawi is endowed with diverse natural resources which include some of the most fertile soils, forest and water resources. Its ecosystems accommodate diverse species of flora, fauna and fish resources. However these resources are currently challenged by complex interaction of several factors, including a rapid annual population growth rate of about 2.8%.

The proposed MFERP activities will cover 15 flood affected districts in Malawi - both urban and rural areas of the country. Project activities with civil works which will trigger significant environmental and social impacts are those related to rehabilitation/re-construction of bridges, irrigation schemes, boreholes, water supply schemes, schools and health centres among others.

The purpose of this chapter is to provide an overview of the conditions of the environmental and social situation in the 15 selected districts and the country as a whole. This is necessary in order to understand the existing pressure and risks posed by the proposed rehabilitation/re-construction works on the already fragile environmental components of Malawi.

4.1 Physical Environment

Physiography and Land Resources

The physical configuration of Malawi is dived into five zones and these are: Rift valley floor, rift valley scarp, hill zones, plains and plateaus. The Rift valley floors consist of lakeshore plains and Lower Shire Valley. The Rift Valley Floor is among the rich agricultural regions of Malawi due to fertile alluvium soils. Other important agricultural regions are plains such as Lilongwe–Kasungu Plains and Phalombe Plains. These areas contain latosols (red–yellowish soils). These soils support a range of arable crops including maize, tobacco, groundnuts and beans.

Total land surface in Malawi is about 9.4 million is land. Land under water bodies is about 2 million hectares. Agricultural estates occupy 1.2 million hectares and the area potentially available for agriculture by small holders farmers is approximately 6.5 million hectares after adjusting for wetlands, steep slopes and traditional protected lands as presented in the following table:

Table 2: An overview of land availability in Malawi.

	Million hectares	%	% of total
Total land area of Malawi	9.4		100
• Less national parks, forests and game reserve	-1.7		18
• Land available for agriculture	7.7		82
• Land available for smallholder agriculture and estates	7.7	100	82
• Land under estates	1.2	16	13
• Land available for smallholder farmers	6.5	84	69

Source: Malawi National Land Policy, 2002, page 7

Some official government estimates indicate that about 55% of the smallholder farmers have less than one-hectare of cultivable land, which does not meet their basic food needs. As a result more than half of the population are unable to produce enough for food and cash such that the majority live below the poverty line of US$280 per capita income annually. Much of the shortage of arable land for cultivation for smaller holder farmers felt widely and rapidly increasing in the Southern and Central regions of the country. Arable land is already problematic in districts in central and southern region of Malawi. As a result more than half of the population are unable to produce enough for food and cash such that the majority live below the poverty line.

Land Tenure Regimes In Malawi

Malawi embraces the capitalistic ideals with regard to land ownership. There are five distinct land tenure classes existing in Malawi, which are detailed as follows:

i. Customary Land. This is land held in trust for all people of Malawi by the president, who delegates his authority to traditional chiefs. This constitutes about 75% of the total 9.4 million hectares of the land. The land is commonly held and distributed to the people by local chiefs. Although each person has recognised ownership to a piece of land, he or she cannot trade on it as the land can be reassigned to other people in case the chiefs deem it fit. A coherent system in the distribution of land exists in both patrilineal and matrilineal societies.

ii. Leasehold Land. This is part of private land that is leased by individuals or other legal residents. The lease period varies according to type of use that someone has applied for. Currently these fall into three groups of 21 years old leases for agricultural uses, 33 to 99 years old for property and infrastructure developments, and over 99 year lease for those who would wish to sublease to tenants of 99 years. About 8% of the land in Malawi is in this category.

iii. Freehold Land. This is land, which has been granted to persons for perpetuity. The government has no specific control on transactions except on planning permission on uses. This lease is now limited to Malawian citizenship only. It is difficult to enforce conservation measures on this land because of the exclusivity, which the persons enjoy, particularly some owners who live overseas.

iv. Government Land. This is public land is owned and used by government for public utilities, schools, hospitals, government offices and other properties, markets, roads, government irrigation schemes and other public goods throughout the country.

v. Public Land. Land managed by agencies of the government and traditional leaders in trusts for the people of Malawi, openly used or accessible to the public at large. This includes catchments areas, protected forest reserves, national parks, game reserves, dambos, community forests, riversides, flood plains, wet lands, military sites and others.

Post – disaster needs analysis has identified that about 90,000 hectares of food and cash crops have been affected by 2015 floods. Much of the land affected by floods belongs to

smallholder farmers under customary land tenure. It is estimated that due to the effects of floods, the output of maize would decline by 40% compared to output in 2013/2014 fiscal year.

Climate

Malawi climate is influenced by proximity to the huge lake that covers almost two thirds of its entire length. The climate is tropical continental with three distinct seasons, the hot - rainy season from November to April, the cool-dry season from May to July, the hot dry season from August to November.

Annual rainfall in Malawi ranges from 700 to 2200 millimeters. Topography and proximity to the lake influence its distribution. High rainfall (1500-1900 millimetres per year) is experienced in high plateau areas such as Mulanje Mountains, Zomba highlands, Viphya and Nyika Highlands. Moderate rainfall (800-1200 millimeters) occurs mostly in the plains, which include Lilongwe – Kasungu Plains and West Mzimba Plains. Most of the arable and food crops are planted in this rainfall belt. The lowest rainfall (about 700-800 millimeters per year) is registered in rain shadow areas such as the rift valley, west of shire highlands, north west of Viphya and Nyika highlands.

The mean annual minimum and maximum temperatures for Malawi range from 12 to 32 degree Celsius. The highest temperatures occur at the end of October or early November, but thereafter, the rains bring moderating effects. The cold periods are in June and July. Highest temperatures are recorded in the Shire Valley and along the lake shore while the lowest temperature are recorded over the high altitude areas particularly the Shire Highlands, the Viphya and Nyika Highlands, Dedza and Mulanje highlands.

Rainfall has profound impact on environmental degradation in Malawi. Surface runoff causes soil erosion. In this regard, risks of soil erosion would be high from construction works under Public Works Programme during rainy seasons. Contractors and labourers have to schedule excavation works during the dry seasons. Additional erosion protection measures, including planting local species of trees, shrubs and grasses in the sensitive areas are recommended.

Water Resources

Malawi water resources are in two main categories namely: surface and ground water resources. Surface water resources are derived from rainfall. The rich surface water resources comprise a network of rivers and lakes that count for about 20% of the country's area. The dominant water body is Lake Malawi and the Shire River systems, which are interlinked since the Shire River serves as the only outlet of Lake Malawi. The drainage system is divided into 17 water resources areas.

Map 2 shows a network of main river basins, location of Lake Malawi and other lakes in Malawi. The following paragraphs review the conditions of river basins in some of the 15 flood affected districts.

In Karonga District, prominent rivers which maintain good flows of water for some parts of the year include Songwe River, Lifura River, North Rukuru and Hara River. However due to human settlement activities and encroachment along the riverine belt, most rivers are affected by soil erosion and siltation. As a result, most rivers experience high flows during early- middle part of rainy seasons and often flood. Most rivers dry up by August.

In Salima district, Linthipe River and Lingadzi Rivers are associated with flooding. Linthipe River rises from slopes of Dedza Mountain and it meanders wildly through the mountains. It has two main distributaries which are Lilongwe River and Diamphwe River in the middle.

These rivers provide significant water flows to Linthipe River. Ligadzi River rises from Dowa Hills and flows down to Domira Bay at Lake Malawi. In the rainy seasons, Linthipe and Lingadzi River sometimes overflow and cause flooding in Salima.

In Ntcheu District, Bwanje valley is annually affected by floods due to overflowing of Bwanje River and its tributaries. The river and its tributaries drain from Bangwe Mountains within Kirk Range. Bwanje River flows through an extensive plain all the way into Lake Malawi on northern part of Ntcheu. Due to human settlement activities and encroachment along the river banks, most upper parts of river courses are affected by soil erosion and siltation. As a result, most rivers indicate high flows during early to middle rainy seasons and cause flooding downstream.

In Southern Region main rivers rise from Kirk Range and Shire Highlands (including Zomba mountains and Mulanje mountains). Rivers from the Kirk Range include Lisungwi River, Wankulumadzi River, Mwanza River and Mkodzi wa Fodya River which drain into Shire River. Other rivers from Shire Highlands include Lunzu River, Lukhubula River. All these rivers drain through areas of poor vegetation, high land degradation and low rainfall. Consequently rivers are high laden with debris and silt.

Mulanje Mountain is the source of important perennial rivers which drain into Shire River. These include Thuchila River and Ruo River. As with other river basins, Thuchila and Ruo Rivers are heavily affected by soil erosion and siltation due to tea cultivation, high population pressure and encroachment along the riverine belt. Floods are more frequent along Ruo River and they take different forms. In some cases especially in the flat areas such as Makhanga flooding causes total inundation of homes and infrastructure.

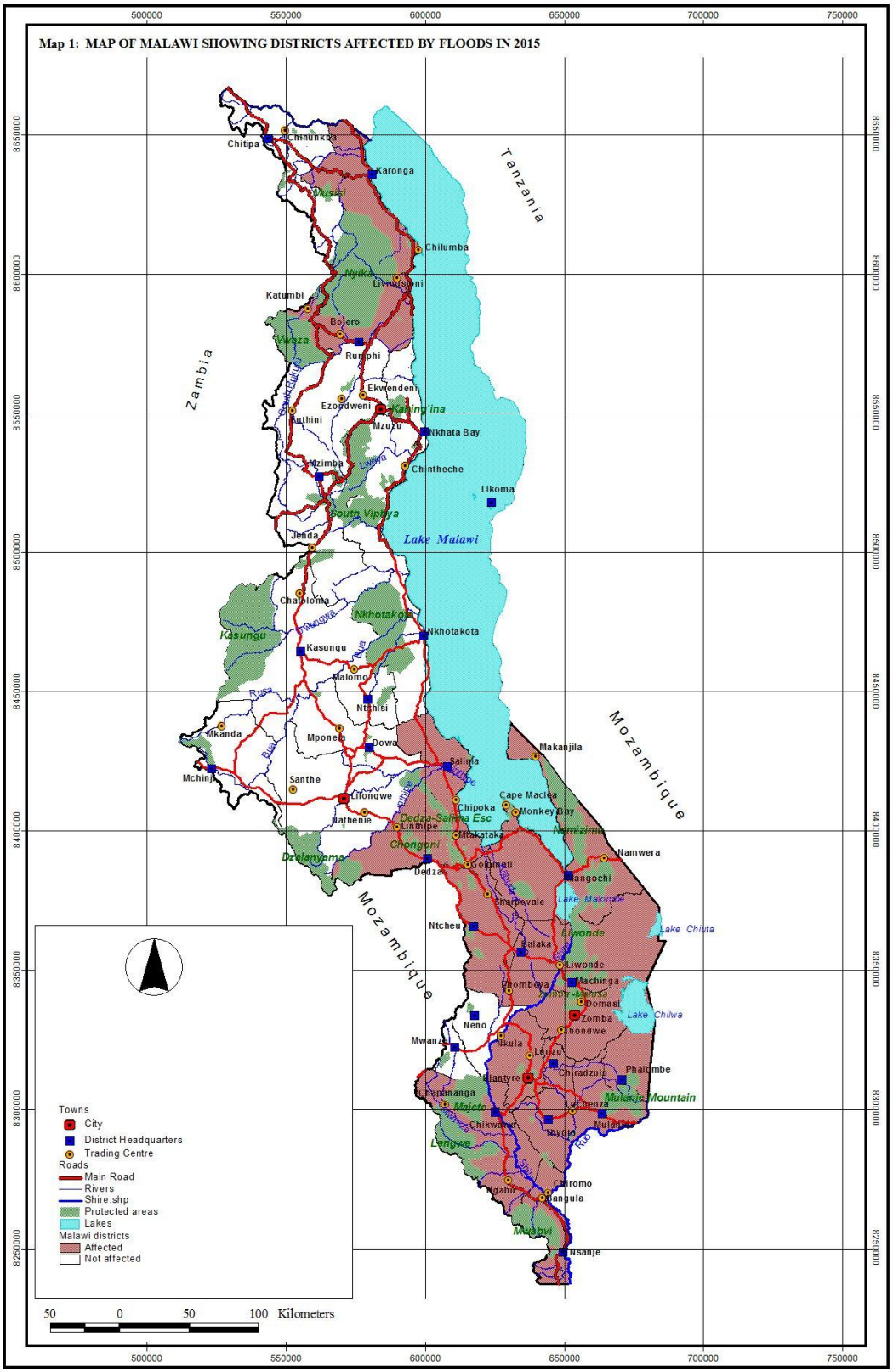
The National Environmental Action Plan (1994) highlights that hydro chemistry of the majority of the surface resources in Malawi is alkaline earth (calcium and magnesium) delineated by the cation group and by carbonate system in the anion group. Most of the surface waters are classified as soft to moderately soft. The microbiological quality of most major rivers is generally poor all the year round especially those that are draining through cities and towns. Typical counts of faecal bacterial colonies range between 50 to100 per 100 millimeters of sampled water. The physical quality of surface water is also affected by human activity occurring in various catchment areas. High levels of suspended solids are found in most of the surface water bodies. High population growth has forced people to cultivate marginal areas, and to clear vast expanses of land for tobacco, other crops and livestock farming. This has resulted in excessive soil erosion, loss of soil fertility, destruction of catchment areas, and loss of biological diversity and the natural resources base.

Malawi contains has some important wetland ecosystems. Examples of wetlands in flood affected districts include the shorelines plains of Lake Chilwa, and Lake Chiuta, a diversity of Dambo ecosystems, and the Elephants and Ndindi Marshes in the lower Shire Valley. Wetlands provide important habitats for plant and animal species such as birds in the Lake Chilwa plains, and the elephants in Ndindi marshes. In addition, the wetlands provide sheltered fish spawning and nursery grounds and as well as habitats for adult fish. During field surveys, it was observed that the 2015 floods have affected some of these important wetlands such as the Ndindi and Elephants Marshes. Floods have negatively affected the biological diversity of wetlands through wash always and water logging.

In the context of water resources, significant negative impacts would result from civil works on rehabilitation/reconstruction of roads, bridges, irrigation schemes and water supply schemes due to proximity of the projects to rivers. Civil works may exacerbate soil erosion and subsequent siltation in surface drains, streams and rivers. Such siltation contributes to pollution and also affects the growth of fish resources and other marine wildlife in rivers. In

addition, an increase in the use of harmful pesticides (on rehabilitated irrigation schemes) may result in pollution of the rivers around the schemes.

Environmental and social management plans have to be put in place to address negative impacts such as soil erosion, siltation of drains and rivers.


Map 1: MAP OF MALAWI SHOWING DISTRICTS AFFECTED BY FLOODS IN 2015
Tanzania
Zambia
Mozambique
Mozambique
Lake Malawi
Lake Malombe
Lake Chilwa
Lake Chiuta
Mulanje Mountain
Chitipa
Karonga
Chilumba
Nyika
Katumbi
Bolero
Rumphi
Ekwendeni
Ezondweni
Kaning'ina
Ruthini
Mzuzu
Nkhata Bay
Mzimba
Chintheche
Likoma
South Vipya
Jenda
Chaplooma
Nkhotakota
Kasungu
Kasungu
Malomo
Ntchisi
Mkanda
Mponela
Dowa
Salima
Makanjila
Mchinji
Santhe
Lilongwe
Cape Maclea
Chipoka
Monkey Bay
Nathenie
Linthipe
Dedza-Salima Esc
Ntaskataka
Chongoni
Dzulanyama
Dedza
Golomoti
Namwera
Mangochi
Sharpevale
Ntcheu
Balaka
Liwonde
Machinga
Phombeya
Domasi
Zomba
Neno
Mwanza
Mkula
Thondwe
Lunzu
Blantyre
Chiradzulu
Phalombe
Chapananga
Majete
Lychenya
Mulanje
Chikwawa
Thyolo
Lengwe
Chiromo
Ngabu
Bangula
Mwabvi
Nsanje
Towns
City
District Headquarters
Trading Centre
Roads
Main Road
Rivers
Shire.shp
Protected areas
Lakes
Malawi districts
Affected
Not affected
50 0 50 100 Kilometers
500000
550000
600000
650000
700000
750000
8650000
8600000
8550000
8500000
8450000
8400000
8350000
8300000
8250000

4.2 BIOLOGICAL ENVIRONMENT

Vegetation

There are various vegetation types in Malawi and in the flood affected areas. However the common type is Dry Savannah Woodland which extends within the rift valley region. Some parts of the area (such as Karonga, Balaka and Chikwawa) this vegetation type has been modified by grazing of livestock. Existing indigenous trees of economic Importance (within this vegetation type) within the area are follows: *Acacia nigrescens, Pterocarpus brenanii Comretum ghasalense, Sterculia Africana, Acacia tortilis, Bauhinia petersiana, Dalbergia melanosilon, Adansonia digitata (Baobab) and Faidherbia albida among others. There are also* different grass species and shrubs within this vegetation.

In Salima, Ntcheu, Mangochi and Balaka districts, *Faidherbia albida* and Baobab trees are specially maintained and conserved in smallholder gardens of local households. *Faidaherbia albida* is an important agro forestry tree species and is known to enhance soil fertility through humus of shaded leaves. Trees shade leaves during rainy seasons, and humus from the leaves fixes nitrogen nutrients in the soils. The fact that the trees are leafless during rainy season minimizes competition from sunlight with crops and protects them from birds until harvest time. The leaves and pods of this trees are used for fodder during the dry seasons. Some *Faidherbia albida* trees are used for fuel wood and construction materials by local communities.

Baobab is also an important tree to local communities. One economic use is supply of fruits which local people eat while fresh or dry. The fruits are sold and used for production of high value juices by local manufacturers in the area. The leaves of Baobab trees are used as relish and traditional medicines by some local people in some of these flood affected districts.

Potential implications of the proposed MFERP to vegetation in the flood affected districts would be in three ways. The first implication will be cutting down trees to pave way for reconstruction and rehabilitation of roads, bridges and irrigation schemes. The second implication would be extraction of construction poles for temporary housing structures of migrant construction workers. The third implication is the increase in demand for firewood and charcoal by the project workers. Demand for firewood and charcoal would escalate the existing high rates of deforestation in the flood affected districts.

Forest Reserves

Forest reserves are a vital natural resource in Malawi. They supply 90 percent of the country's energy needs and provide timber for construction and other industrial use. Forests help maintain air, soil and water quality; influence biochemical processes; regulate run-off and groundwater, reduce downstream sedimentation and the incidence of flash flooding in addition to controlling soil erosion; provide watershed protection and enhance water resources. About half of Malawi's forest cover is on customary land, owned but the local communities. The extremely high reliance on biomass for energy needs imposes heavy strains on the biological diversity of the forest ecosystem in the country. A commitment to conserve the biological diversity and the natural resource base in Malawi is enshrined in the Constitution of Republic of Malawi under section 13 paragraph 4d (v).

Available government information estimates that about 28% (2,632, 000 hectares) of the total land area of Malawi can be broadly classified as forest land covered with vegetation. Out of these forest resources, 16000 hectares constitute plantations and woodlots. There are 85 protected forest reserves covering about 1, 109, 626 hectares .There are also 40

proposed forest reserve which cover about 154,137 hectares . In addition, 800,000 hectares are natural woodlands on customary land. Map 2 highlights some main forest reserves in Malawi.

Forest reserves on customary land are reportedly being depleted at a rate of 1.6% (50,000 hectares) annually because of clearing for small scale agriculture, large estates, fuelwood, building poles, and also due to overgrazing and building infrastructure such as roads, settlements and bush fires. This has led to land degradation which in turn has had far reaching effects on living standards on the people. This situation has been aggravated by high population growth rate.

National Parks and Game Reserves

Six protected wildlife reserves exist within the 15 flood affected districts. These are Nyika National Park in Rumphi, Lake Malawi National Park in Mangochi, Liwonde National Park in Machinga, Majete Game Reserve and Lengwe National Park in Chikwawa and Mwabvi Game Reserve in Nsanje. The location of all these six wildlife areas are shown on Map 2 above. During field surveys and consultations, three wildlife reserves had been affected by floods in 2015 and these are Liwonde National Park, Lengwe National Park and Mwabvi Game Reserve. The effects are water logging and closure of service roads and access routes of wildlife within the parks. It was noted that government is at advanced stage of undertaking rehabilitation of roads and access roads within Liwonde National Park, Lengwe National Park and Mwabvi Game Reserves. New gravel roads will be constructed soon after rainy season and the exercise will address some of the challenges caused by the floods.

Nyika National Park - located on plateau in Rumphi - has not been affected by floods. Plateau area has montane vegetation. The grasslands of are rich in wildflowers all through the year. The escarpments and northern hill areas descend to lower altitude and feature a much drier landscape. Vegetation within escarpments and hills is dominated by *Brachystegia* woodland. Zebra and Elephants are often seen anywhere on the plateau. The park has over 400 species of bird have been recorded in the park. Common species include Denham's Bustard, Wattled Crane and Red-Winged Francolin (the latter is an endemic).

Lake Malawi National Park has not been affected by floods. The park has over 500 fish species of which 350 species are endemic to Malawi. The lake contains 30% of all known cichlid species. Mammals include Hippo, Duiker, Baboon, Vervet Monkey, Bush Pig, Warthog and Elephants. The park is rich in birdlife including fish eagle along the shoreline.

Liwonde National Park includes parts of Upper Shire. There are reed swamp and marshland along the Shire River and southeast shore of Lake Malombe, floodplain grassland in the south, mixed woodland on all the hills, tall grass tree savannah along the narrow floodplains of seasonal streams, small pockets of semi-deciduous riverine forest. Common Wildlife Include: Elephant, Hippo, Impalas, Waterbucks, Warthogs, Vervet Monkeys, Yellow Baboons, Bushbucks and Kudus. In the mopane woodland there are several hundreds of Sable Antelopes. Predators include Lions, Leopards, Serval, and Genet . In addition, the park, has considerable water – associated bird species and these include African Fish Eagle, Pied Kingfisher, Saddle-Billed Stork, Goliath Heron, Red-Necked Falcon, Palm-Nut Vulture and White-Backed Night Heron.

Lengwe National Park is regularly affected by floods due to poor drainage. Water logging is common during rainy seasons. Water logging affects service and access roads and movements of both tourists and wildlife. The park is the home of Nyala Antelope, Elephant, and Kudu among others. The climate is hot and dry, and the only source of consistent water is from the rain. Many man-made water holes have been constructed to attract and maintain the animal population.

Mwabvi Game Reserve has been affected by floods due to overflowing of streams within the wildlife reserve. The reserve has a wide variety of habitats, including Mopane, and *Brachystegia* woodland. Improvements in protection and conservation of flora and fauna have been carried out over the last 8 years. This has resulted in an increase in numbers of wildlife including herbivores and birds. Examples of common herbivores are Impalas, Hippopotamus, Vervet Monkeys, Yellow Baboons, Bushbucks, Sable Antelopes and Kudus. Carnivores found in the park include Lion, Jackal, Serval and Leopard, although these are not as abundant as herbivores.

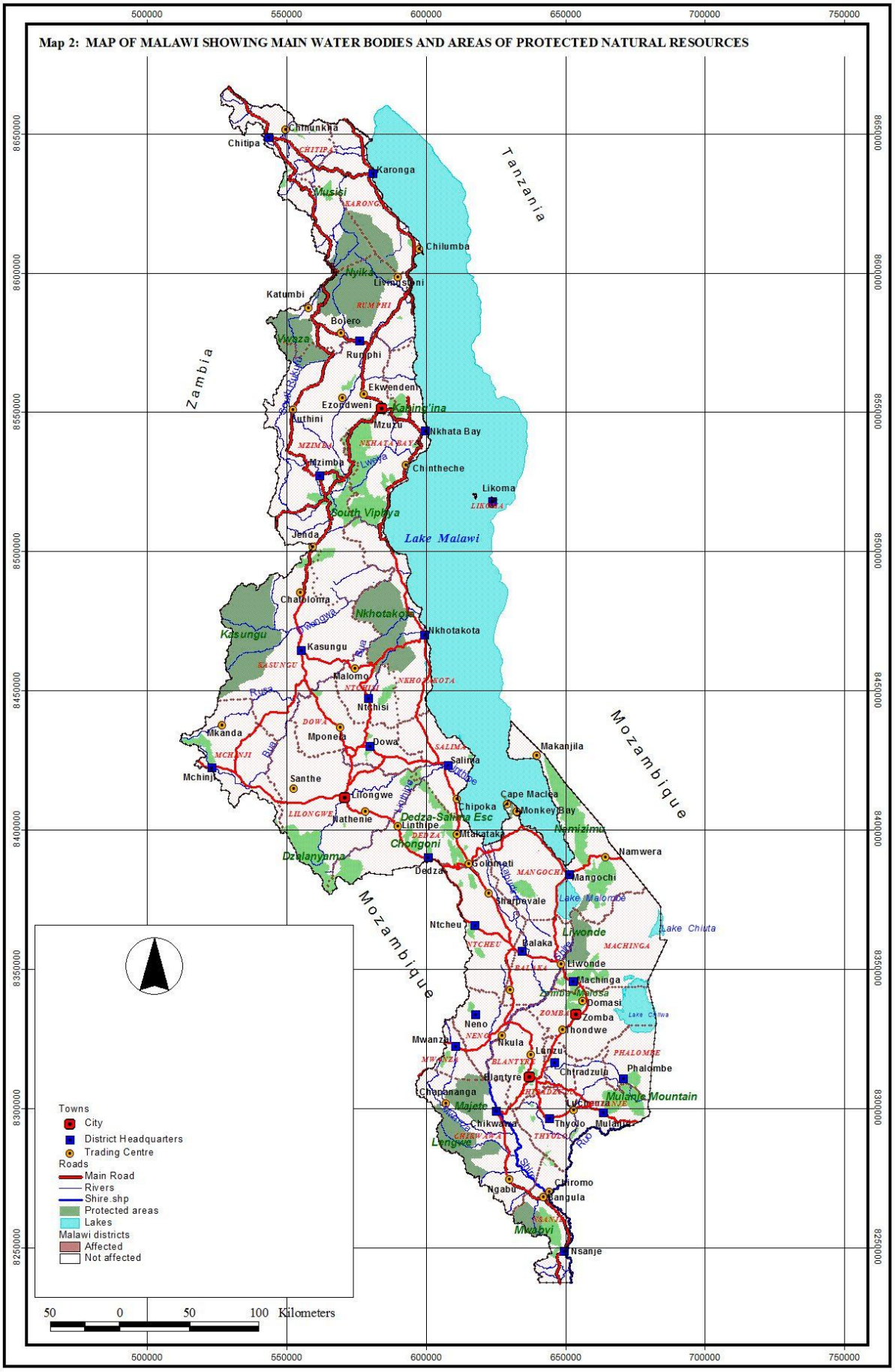
There are a number of problems faced in the management of national parks and game reserves in Malawi. These include the shortage of trained staff and resources (vehicles, equipment) for effective monitoring poachers and wildlife migration. In addition, lack of adequate funding for management of parks and game reserves has resulted to inadequate control of poachers and other external threats. The other problem emanates from some wildlife such as hippos, elephants and buffaloes which tend to move out of the park for greener pastures in gardens along the parks. Elephants move around to eat green crops such as winter maize, beans and vegetable. Such incidences create serious conflicts with local communities.
There are a number of external threats to the management of the park. One major threat is the pressure from poachers who a target elephant for ivory, and duikers, kudus for bush meat. The second problem relates to increase in deforestation as a result of firewood extraction and charcoal making by local people around the park.

This study has reviewed the scope of project activities, and has identified the following which can generate negative risks to flora and fauna:

- Influx of migrant workers during construction period would enhance extraction of firewood and charcoal within national parks and game reserves. The malpractices would enhance deforestation in the parks.
- Influx of migrant workers may enhance demand for ivory and game meat. Such risks may escalate poaching of wildlife in national parks and game reserves.
- Crop raiding by wildlife, leading to human/wildlife conflict.

During field surveys and consultations, it was noted that government is at advanced stage of undertaking rehabilitation of roads and access roads within Liwonde National Park, Lengwe National Park and Mwabvi Game Reserves. New gravel roads will be constructed soon after rainy season and the exercise will address some of the challenges caused by the floods. Activities in Liwonde and Lengwe National Park will be funded by the Shire River Basin Management Programme and will rehabilitation of roads and bridges in Mwabvi Game Reserve will supported by Agricultural Sector Wide Approach Project.

Malawi Floods Emergency Recovery Project will not fund sub-projects in protected wildlife reserves and forest reserves. Sub-projects in affected wildlife reserves/national parks and forest reserves will be supported under another World Bank funded project Shire River Basin Management Programe


Map 2: MAP OF MALAWI SHOWING MAIN WATER BODIES AND AREAS OF PROTECTED NATURAL RESOURCES
500000
550000
600000
650000
700000
750000
8650000
8600000
8550000
8500000
8450000
8400000
8350000
8300000
8250000
Tanzania
Zambia
Mozambique
Mozambique
Chitipa
Chimunkha
Karonga
Chilumba
Nyika
Livingstoni
Katumbi
Bojero
Vwaza
Rumphi
Ekwendeni
Ezondweni
Kaning'ina
Kuthini
Mzuzu
Nkhata Bay
Mzimba
Chintheche
Likoma
South Viphya
Lake Malawi
Jenda
Chatoloma
Nkhotakota
Nkhotakota
Kasungu
Kasungu
Malomo
Ntchisi
Mkanda
Mponela
Dowa
Salima
Mchinji
Santhe
Lilongwe
Nathenje
Linthipe
Dedza-Salima Esc
Chongoni
Mtakataka
Dzalanyama
Dedza
Chipoka
Cape Maclea
Monkey Bay
Nemizimi
Makanjila
Namwera
Mangochi
Golomoti
Shanevale
Lake Malombe
Ntcheu
Balaka
Liwonde
Lake Chiuta
Machinga
Domasi
Zomba
Zomba-Malosa
Lake Chilwa
Thondwe
Neno
Nkula
Mwanza
Lenzu
Phalombe
Chitradzulu
Blantyre
Chapananga
Majete
Mulanje Mountain
Chikwawa
Thyolo
Mulanje
Lengwe
Shire
Chiromo
Ngabu
Bangula
Mwabvi
Nsanje
Towns
City
District Headquarters
Trading Centre
Roads
Main Road
Rivers
Shire.shp
Protected areas
Lakes
Malawi districts
Affected
Not affected
50
0
50
100
Kilometers

4.3 Socio-Economic Environment

Population and Human Settlements.

The estimated population of Malawi (2013) is 16 million, and the annual growth rate is 2.9%. Children under the age of 18 years constitute about 50% of the population size which indicates high dependency ratio. Females are about 53% of population while males are about 47% of the population. National Population density is 148 people per square kilometer. However, almost all 15 flood affected districts (from Karonga to Nsanje) population densities are among the highest in Malawi, ranging from 160 to about 350 persons per square kilometre. About 85% of the population live in rural areas and depend on small holder farming while only 15% of the population live in towns where as much as 75% of the urban population live in poor peri-urban and informal settlements.

The population growth rate, density and distribution in the country have direct effects environment. Intensive and large scale human settlements enhance land degradation, natural resource utilization and depletion in incidences on excessive extraction. Infrastructural developments (water pipes, sewerage pipes, roads) have potential to negatively affect the environment. In this regard, understanding human settlement and socio-economic development is essential in environmental management.

Main urban areas in Malawi are: City of Lilongwe (capital city, about 1000,000 people), Blantyre (commercial capital, about 800,000 people), Zomba City (about 200,000 people) and Mzuzu City (estimated population of about 220,000 people). The majority (about 70%) of people in urban areas live in unplanned settlements, where there are inadequate services. Quality of housing in unplanned settlement is quite poor. Poor quality of housing is also visible in most rural areas. Population and Housing Census (2008) on Malawi's housing indicates that housing structure in Malawi consists of 43% as traditional housing, 34% semi-permanent housing and 23% as permanent housing. Main building materials for permanent houses are burnt bricks, iron sheets, titles, concrete or asbestos for roofs. The semi-permanent houses are built of sun dried bricks and grass thatched while traditional house is built of mud walls and thatched roof. Major environmental problems in urban areas is due to the high density slums/squatter settlements. It is estimated that about 70% of urban population live in unplanned settlements where housing conditions are quite poor characterized by poor sanitation, lack of potable water, poor roads among others. Other major environmental problems in urban areas include indiscriminate disposal of solid wastes and liquid wastes.

Economic Situation

The economy of Malawi is predominantly agricultural, with about 85% of the population living in rural areas. The landlocked country in south central Africa ranks among the world's least developed countries. Agriculture accounts for 29% of GDP and 85% of export revenues. The economy depends on substantial inflows of economic assistance from International Monetary Fund, the World Bank, and individual donor nations. The government faces strong challenges: to spur exports, to improve educational and health facilities, to face up to environmental problems of deforestation and erosion, and to deal with the rapidly growing problem of HIV/AIDS in Africa.

Agriculture represents 37% of GDP, accounts for over 80% of the labor force, and represents about 80% of all exports. Its most important export crop is tobacco, which accounts for about 70% of export revenues. In 2008 the country was the tenth largest producer in the world. The country's heavy reliance on tobacco places a heavy burden on the economy as world prices decline and the international community increases pressure to

limit tobacco production. Malawi's dependence on tobacco is growing, with the product jumping from 53% to 70% of export revenues between 2007 and 2008. Rural poverty stands at 56.5% compared to urban poverty at 25%.

Other important exports are tea, sugarcane and coffee. These crops are grown in commercial estates/plantations. Sugarcane is grown and processed by Illovo Sugar Group on its two large irrigated sugarcane estates at Nchalo in Lower Shire Valley and Dwangwa Sugarcane Estates in Nkhotakota District. Exports from sugar, tea and coffee constitute about 20% of Malawi's exports. Most of tea is grown in Mulanje and Thyolo.

Malawi has few exploitable mineral resources. An Australian consortium exploits uranium in at Kayerekera uranium Mine near Karonga. Coal is being extracted at various sites including Mchenga Coal Mine and Eland Coal Mine in Rumphi District. Malawi's economic reliance on the export of agricultural commodities renders it particularly vulnerable to external shocks such as declining terms of trade and drought.

Malawi's manufacturing sector contributes 18.9% to the national GDP. Malawi's manufacturing industries are situated around the city of Blantyre and City of Lilongwe. Main sectors are food processing, construction, consumer goods, cement, fertilizer, ginning, furniture production and cigarette production.

According to the post – disaster needs analysis report, the effects of damages and losses are estimated to result in a projected negative impact on GDP growth in 2015, to the tune of 0.6 percent. The economic costs resulting from the negative impact of the floods, other things being equal, may thus lead to GDP growth falling short of the 5.8 percent projection set for 2015. Economic growth is largely premised on expansions in agriculture, manufacturing, wholesale and retail trade, utilities, and transport sectors, most of which have been directly or indirectly adversely affected by the floods.

Irrigated Agriculture Development

Over the last ten years, Malawi has made significant strides in irrigated agriculture to complement rain fed agriculture. Commercial irrigated agriculture is undertaken by private companies and has made considerable achievement in cash crop production as well as food crop production. Irrigated cash crop production focuses on commercial plantation crops such as sugarcane, coffee and tea. Sugar, tea and coffee are among high value cash crops and leading exports from Malawi. Illovo Sugar Estates maintains about 29,000 hectares of sugarcane estates in Chikwawa District and Nkhotakota District. Dwangwa Sugarcane Estates utilizes water from Dwangwa River and Lake Malawi. Illovo Nchalo Sugarcane Estates and Alumeda Sugarcane Estates abstract water from Shire River. Smallholder sugarcane estates constitute about 4,000 hectares and these have been developed around Dwangwa Cane Growers Trust and Kasinthula Smallholder Scheme in Chikwawa district. Kasinthula Smallholder Sugarcane Scheme abstracts water from Shire River. Irrigated tea and coffee plantations constitutes about 9,000 hectares and most of these are in Thyolo and Mulanje Districts. Most tea and coffee estates in Thyolo and Mulanje abstract water from Ruo River and Thuchila River.

Promotion of smallholder irrigated agriculture has focused on production of food crop and cash crops for smallholder farmers across the country. Most of smallholder irrigation schemes use water from perennial streams. The strategy adopts farmer participation in community based schemes in order to enhance sustainable food security and cash crop production. It is anticipated that such agricultural production would contribute to more cash crop production and industrial production which would in turn increase exports for international markets.

Available government records indicate that by 2014 there were about 101,000 hectares of irrigated smallholder schemes in the country. About 98,000 hectares of irrigated schemes were under utilization by 415,205 farmers (225,340 males and 189,865 females). Technology used in smallholder irrigation schemes include gravity fed system, motorised pumps, treadle pumps and watering cans.

The gravity-fed technology accounts for 56% of the total developed area under smallholder farmers. A total 57,000 hectares have been developed under the technology, out of which 54,842.24 ha were being utilized for irrigation. The motorized pump-based irrigation technology covers about 8,000 hectares. The treadle pump-based technology accounts for 29% of the total developed area covering 29,000 hectares. And the watering can-based technology accounts for 7% of the total hectarage under smallholder farmers and a total of 7,113.05 ha were developed by the end of the 2013/14 financial year, out of which 6,855.28 ha were actually being utilized.

The 2015 floods have caused tremendous damage to irrigation infrastructures and irrigated crop land in the 15 flood affected districts. Examples of damages on irrigation infrastructure observed during field surveys include over-topping erosion and headworks failure. There has been inundation of main canals and these effects have caused breaches in most cases and wash away of pipelines. In addition, the surge of overland flow impacted irrigation land close to the point of failure with sand deposits and the concentrated 'dam break' flows also damaged infield irrigation structures, scheme roads & related structures, flood protection bunds, water storage reservoirs etc.

Although other areas are still inaccessible hence difficult to quantify the damage to irrigation infrastructure, initial assessment puts the replacement cost to flood damaged irrigation infrastructure at MK2.6 billion. This figure includes only the damage to infrastructure, and it excludes loss of land due to erosion, sand deposits and loss of livelihood. Table 2 shows the quantities of damaged irrigation infrastructure with the estimated replacement cost.

Table 3: Summary of damages on irrigation schemes

Category	Number	Estimated value for replacement
Head works	56	805,149,150.00
Flood Protection Embank-ments/Bunds	173	134,191,525.00
Irrigation Canals	46,776	268,383,050.00
Dams/NSR	13	322,059,660.00
Pipes	16,317	214,706,440.00
Pumping Stations	121	134,191,525.00
Infield Structures	663	80,514,915.00
Wells	2,707	456,251,185.00
Scheme roads	1,078	134,191,525.00
Scheme roads infrastructures	51	80,514,915.00
Drainage canals	280	26,838,305.00
Drainage structures	42	26,838,305.00

The main impact of damaged irrigation infrastructure and flooding of irrigation areas is suspension of irrigation crop production/winter farming. This is a major drawback for flood displaced people and surrounding communities because winter farming contributes to food security in the areas around the scheme. Reconstruction and in some cases repairs to damaged infrastructure have to be urgently implemented in order to mitigate the impacts of floods in the medium to long-term.

Irrigation development in Malawi remains a pillar for food security and improved nutrition. MFERP will support rehabilitation of irrigation schemes. The activities will be carried out with support of Water Users Associations who own and manage various schemes damaged by 2015 floods. Rehabilitation of irrigation schemes have been taken as a priority in order to restore food security among the flood affected communities. The damaged schemes will be categorized according to size (hectares) of the scheme as follows:

a) **Mini Irrigation Schemes (below 10 hectares):** These are mini schemes under small farmers at village level. It is only the water intake is made out of concrete and the rest of the field canals are earthen. In some cases, the intake and the main canal are brick lined and the rest of the canals (secondary and tertiary) are earthen. Most of the damages are within the water intake and that is where external assistance in terms of repair will be done.

b) **Small-Scale Irrigation Schemes (between 10 and 50 hectares)** these are small-scale irrigation schemes have substantial investments covering the intake, main canal and in many cases the secondary canals. Repair of damaged headworks and canals will required hired contractors.

c) **Large-Scale Schemes (over 50 hectares):** These schemes attract relatively large investments and any damage to both intake and in-field structures mean high cost. Fortunately, scheme organization is generally better organized to orient activities toward maintenance.

The role of the Water Users Association in scheme rehabilitation or reconstruction is to determine the level of damage that has occurred to the schemes or related sections. The District Irrigation Officer will prepare the Bills of Quantities for consideration of District Executive Committee. Considering that the schemes damaged have already been identified, communities will be approached to properly determine the areas of damage that can be repaired by outside institutions (through project resources) and the parts of the damaged scheme that can be repaired by the community itself. The district will submit the bill of quantities to PIU for funding rehabilitation works. If they are small works, local contractors or artisans will be recruited through community contracting.

Transport Infrastructure

The transport sector in Malawi is comprised of four sub-sectors, namely roads, rail, water and air. Road transport is the dominant mode of transport on land as compared to rail due to the flexibility allowed to users in reaching remote areas and also due to the poor condition of rail infrastructure. Map 2 shows a network on main roads in Malawi. Road transport handles more than 70 percent of the internal freight traffic and 99 percent of passenger traffic. Accessibility in rural areas has remained a challenge in Malawi due to the condition of the rural roads, which are mainly comprised of secondary, tertiary, district and community roads. The total road network covers 15,451km, of which 28 percent is paved, while the rest constitutes of either earth or gravel roads.

The Roads Authority has the mandate of overseeing the maintenance, rehabilitation and upgrading of main, secondary and tertiary roads in Malawi. District and community roads are administered by the District Councils but the Roads Authority still assists the districts in providing rehabilitation and maintenance services due to the councils' lack of capacity. The Government of Malawi is currently implementing several programs, including the Agriculture Sector Wide Approach Support Project to address challenges related to the transport sector. The main intervention in the project's roads component is to provide access to areas that have agricultural potential.

Existing transport sector challenges have been aggravated by the floods, which have washed away bridges, drainage structure and road sections, thereby isolating people from their socio-economic amenities, including schools, hospitals and others. The effect of the floods on road infrastructure was also felt when relief items were failing to reach their intended victims, causing them to be delivered by air transport. The majority of the unpaved network lies in rural areas where the flood disaster has had the strongest effect. The Lower Shire has been the most affected. The affected network is comprised of a total of 1216 kilometres, of which about 70 kilometres are main roads, 214 km are secondary, 360 kilometres are tertiary, and 573 kilometres are district and community roads.

MFERP will support the reconstruction and improvement of a part of the fully destroyed and washed away secondary roads in Chikwawa and Nsanje District. The estimated length of secondary roads that will be reconstructed using project funds is 100km. Since these roads are routinely washed away during the rainy season, the project will build these roads to improved standards to make them more resilient to floods as well as offer a more sustainable solution for their future operation and maintenance. This will include the rehabilitation and reconstruction of drainage structures, such as bridges, that will be designed for enhanced structural stability and to ensure resilience against similar future disasters.

Education Infrastructure

The education system in Malawi follows an 8-4-4 pattern comprising primary, secondary and tertiary levels. Primary and secondary education is administered by the Ministry of Education, Science and Technology. In Malawi there are six education divisions and 34 district education offices. In total there are 34 education districts out of 28 administrative districts. Post – disaster needs assessment highlights that about 461 schools out were affected by either floods or storms representing in 25 educational districts (in 15 administrative districts) . The floods affected about 414,173 primary school learners to access quality education. The report also highlights that 222 schools were used as camps or shelters for displaced people who had lost their homes. Due to disruptions of classrooms and suspensions of classes, the quality of teaching and learning was drastically impacted in both short and medium terms. This included loss of school teaching and learning materials and damage to school structures.

Some schools in flood affected districts lost food stocks for school feeding while farms were flooded and some washed away. Several school feeding facilities and storerooms were not spared.

Generally, there were multiple effects of damage in schools due to floods and storms. In Machinga, Balaka Mangochi, Blantyre, Nsanje, Chikwawa, Mulanje, Phalombe, Zomba, Ntcheu and Salima districts, negative effects of floods included collapse of classroom blocks, teachers' houses and pit latrines due to water logging from floods. In other districts some roofs for classrooms and teachers houses were blown off by storms. According to post – disaster needs assessment report estimates, 82 classrooms were totally damaged, while 420 classrooms were partially damaged. The total replacement cost amounts to US$1.6 million. Learning materials were lost as well. This includes textbooks and exercise books with a total replacement cost of approximately US$690,000.

The MFERP will support the rehabilitation and re-construction of classroom blocks and teachers houses.

Health Situation and HIV & AIDS Prevalence

Available government statistics highlights poor health indicators on infant and material mortality rates in the 15 flood affected districts. Malawi infant mortality rate in estimated at 92 per 1000 live birth, child mortality rate is 133 per 1000 live births and maternal mortality rate is 684 per 100,000 live births. Leading causes of death include HIV/AIDS related ailments, malaria, pneumonia, anemia, diarrhea and malnutrition. Malaria accounts for about 50% of monthly outpatient visits in Malawi.

Health services in in the 15 flood affected districts and in Malawi general are provide by government through Ministry of Health (about 65%) coverage), Christian Health Association (CHAM) which covers about 30% of the country. Government has district hospitals (except Phalombe) and health centres in the 15 flood affected districts. However, in some parts of the flood affected districts, reliable health facilities are those under Christian Health Association. Currently main challenges facing health facilities are shortage of drugs and health workers. One of main cause is inadequate funds to purchase drugs and low salaries which cannot motivate health workers.

National HIV and AIDS prevalence rate in Malawi is 12% of adult population. However, prevalence rates vary from one region to the other and from rural to urban areas. The highest rate is in the Southern Region at 20.5% and lowest in Northern Region at 10.2%. Prevalence rate is 17.1% in urban areas and 10.8% in rural areas. Sexual intercourses including extra-marital sex between men and women are the main means of transmission of HIV/AIDS in Malawi. National HIV & AIDS Policy (2012) highlights that migrant workers (mobile population) and women are among categories of people vulnerable to transmission of HIV and AIDS and other sexually transmitted diseases. Proposed construction of new classrooms, office blocks and works will bring some workers within college premises. Recruitment of migrant workers is anticipated during both construction phase and during factory operations phase. Single male migrant workers would be at increased likelihood of contracting HIV and AIDS in the project area. The reason is that some migrant workers would approach potential infected female partners in the surrounding local communities or could be approached by sex workers in the area. In addition, increased disposal income from migrant workers may enhance some workers to indulge in extra –marital affairs will either local girls or married women within surrounding villages.

The 2015 floods have affected health facilities in six flood affected districts, with two public health facilities being fully destroyed in Ntcheu (Masasa and Namisu dispensaries). In addition there were 20 health facilities that were partially damaged; of these, 18 were primary care facilities (all public) and two were secondary care level facilities (one from Christian Health Association). In Chikwawa and Zomba, some facilities are inaccessible due to damaged bridges and roads. Health centers in the affected areas also face problems with health workers being absent, as their homes have been affected and they have lacked medical supplies to cope with the increased needs of the displaced populations.

Works in this component will primarily include the rehabilitation and in-situ reconstruction of a proportion of health facilities damaged or destroyed by the floods. In line with PDNA results, the sub-component will seek to reconstruct and restore the functionality of damaged health facilities (including their upgrading) as well as finance the replacement of medical equipment and medical supplies. In some cases, facilities in high-risk locations will be rebuilt in less vulnerable areas and health facilities will double up as evacuation centers. This subcomponent will also incorporate the element of Building Back Better, such as right sizing and right siting, as well as promoting disaster preparedness and risk reduction activities.

Sexual intercourse (involving migrant workers) during construction period may increase the spread of HV/AIDS and sexually transmitted diseases. This may result into long term nega-

tive impact at local level. The impact is of high significance. With mitigation measures, the impacts can be reduced to low significance. Recommended mitigation measures for adherence by contractors include: (a) prioritize hiring of local workers to migrants, (b) periodic distribution of both female and male condoms, (c) periodic HIV and AIDS sensitization meetings for workers and their spouses (d) development of HIV and AIDS Work Place Policy and disseminating of mitigation measures to workers.

5. CONSULTATIONS, PUBLIC DISCLOSURE AND GREVANCE REDRESS MECHANISMS

5.1 Public Consultations

Procedures for project environmental assessment in Malawi and World Bank Safeguard policies require that adequate and informed consultations be carried out during preparation of environmental and social management framework. Consultations are supposed to provide opportunity for stakeholders/project affected persons to air views/concerns on project activities and provide opinions in appropriate plans before implementation. Consultations also help to avoids possible conflicts or misunderstandings on the potential negative risks and also offer measures for addressing concerns. In addition, consultations help to identify enhancement measures for positive impacts.

In order to undertake informed consultations, disclosure of the project is necessary. Information for project disclosure includes: nature and scope of the project, proponent, main components, period of implementation, potential positive and negative impacts among others.

In carrying out consultations for environmental and social management framework for MFERP, consultants carried out a series of consultations with different stakeholders. These include flood affected people, farmers in selected irrigation schemes, local government officials, extension workers, local leaders, non—governmental organizations and central government officials: A summary of consultations were as follows:

- Consultations with senior officials at various government ministries and departments. Consultations took place in Lilongwe on 18 -27 March 2015.These included Ministry of Finance, Economic Planning and Development, Ministry of Education, Science and Technology, Ministry of Health, Department of Disaster Management Affairs. The discussions centred on the aims and objectives of the project, the scope of the project, design and modalities of implementation. Min issues raised were that the project should have included housing construction for people, support for local roads and re-construction of more teachers' houses. The issue of house re-construction, government officials was advised that the resources were not adequate and that the funds could not cover house re-construction and the focus for the project was on essential service infrastructure such as main and secondary roads, water supply schemes and irrigation schemes. Lists of persons consulted are attached in Annexes 8-11.
- Interviews and discussions with local government officials in four selected district councils. The four selected district councils are among the 15 flood affected districts. Main issues raised by local government officials included: need of participation in selection of sub-projects for implementation, shortage of funds for environmental and social mitigation measures, inadequate food assistance for flood affected people (as priority activities), in adequate transport to supervise environmental mitigation measures, lack of skills in storage and management of pesticides, proposals to enhance environmental and social mitigation measures among others.
- Consultations with selected non-governmental organizations in selected nongovernmental organizations. The nongovernmental organizations consulted were those in four flood affected districts chosen for field surveys: The non-governmental organizations included: World Vision International, Total Land Care, Eagles Relief Development Programme, Catholic Commission, Malawi Red Cross Society. Main issues raised by non-governmental organizations included: involvement of non-

governmental organization in planning and implementation of disaster mitigation related projects, involvement of flood affected people in design and implementation of projects, avoiding duplication in implementation of projects and transparency in resource allocation and utilization on various. Some members of non-governmental organizations raised issues on high costs of pesticides for irrigation farmers. The issues will be incorporated in environmental and social management plans for sub-projects. Most of issues raised by non-governmental organizations would be addressed during planning and implementation cycle of the projects at district level.

- Consultations took place with selected flood affected people and irrigation farmers in four flood affected districts. Views from flood affected people included: that food and clothes assistance was priority at that time and not rehabilitation of irrigation schemes, support to school children disturbed by floods, support with income. Some flood affected people mentioned the need to help in reconstruction of houses damaged by floods. Some flood affected people complained of delay in distribution of food and donated clothes due to poor coordination among local leaders. Consultants could not provide all answers to views/opinions of flood affected people at the time. Most of the issues raised were for local government officials to look into.

5.2 Public Disclosure

Public disclosure of the project is important in order to allow stakeholders/public appreciate the impacts of the project on their lives and environment. Project disclosure can take place during feasibility stage or planning stage or implementation stage. Disclosure of the project activities helps to gather wider views on the project and enlist support from local communities. Among others public disclosure of the project has to cover rationale of the project, nature of the project, period of implementation, areas of implementation, potential impacts and proposed mitigation measures.

Public disclosure for MFERP will follow several stages through various stages and means. These include:

a) Briefs by government officials to news reporters and district information officers at district consultative meetings and briefs to local leaders and non-governmental agencies. These have already been done.
b) Presentation, briefings and debates in National Assembly. The presentation and debates helped members of Parliament and local people to know more about MFERP and why government of Malawi planned the project activities. This was already done from March to May 2015.
c) Another important public disclosure has been through radio announcement. Government officials announced publicly through radio and MBC Television regarding the MFERP.
d) Some members of public will be informed of MFERP through distribution of the project documents in district commissioner's offices, libraries in towns and districts.
e) The Environmental and Social Management Framework, Resettlement Policy Framework and Integrated Pest Management Plan will be posted on websites for various government agencies and World Bank Info. The arrangement will allow more people access information on the project and make informed views and opinions.

5.3 Grievance Redress Mechanisms on Project Activities

Implementation of projects activities under MFERP will take place in various locations of the 15 flood affected districts. Implementation of the activities may generate a number of

challenges and complaints especially to those which relate to infringement of rights of sections of the society. Examples of complaints include: discrimination in distribution of relief food to flood affected people, discrimination among farmers on irrigation schemes, objections to use of someone's land during emergency detours, encroachment on private land, harassment of women, and marginalization of women in distribution of material assistance. And examples of grievances: include dissatisfaction with amount of compensation and, dissatisfaction with size and nature of land replacement. Such grievances are likely to crop up in one way or another in implementation sub-projects under MFERP. It should be pointed out that since the implementation of some labour intensive public works programmes will be community based, negotiation and agreement by consensus will provide the first avenue to iron out and resolve any compliant/grievances expressed by the individuals, the land owners or households whose land and properties might be affected. The communities will ensure that resettlement related grievances should be addressed during the identification and appraisal of sites.

In this context, proper channels of grievance redress mechanisms will be put in place, and the project affected people sensitized to make use of them. The process of grievance redress mechanisms will involve project grievance committees, informal courts handled by traditional leaders (village headmen, traditional authorities) and also formal courts within the judiciary.

a) **Project Grievance Committee**. PIU will ensure that implementation mechanism of each sub-project under MFERP has a project Grievance Committee. The committee will be the first reference point of issues which crops from activities on the site. The committee will be composed of chosen representative of key stakeholders in implementation of sub-project. The committee will operate within framework and timeframe of project cycle. The committee will be set up to address some issues/cases related to activities. The committee will also be responsible for referring some cases/issue to relevant oversight bodies.

b) **Traditional courts**. Traditional courts are community based tribunals and operate in form of primary justice. Traditional courts are based in each local village in the country. When complaints/disputes related to project arise, the matter will be referred to a village head of the area (project area). The village head will organize a village tribunal to preside on the matter. Both parties in complaints/cases will be called to be heard. When one party is not satisfied with the decision at village headmen level, the complaint can be taken up to group village headmen. Similarly, that party not satisfied with decisions on complaints at that level, can take the matter to traditional authorities (T/A) for public hearings. In most cases/ complaints of this nature are sorted out at traditional authority level. However those who are not satisfied with the verdict will be allowed to appeal to the District Commissioner (DC) of the district. Further appeals can be made to the central government. In this regard, the matter can be referred to one of the line ministries (Ministry of Lands and Valuation, Ministry of Labour, Ministry of Local Government) on the matter of dispute which may give direction on the existing policy to be implemented.

c) **Formal Courts**. Formal courts include magistrates, High Court of Malawi and Supreme Court of Malawi. These courts handle both civil and criminal cases. In regards to complaints and cases during MFERP, people with complaints will have opportunity to take cases to these courts for review and determination on course of action. Such cases may include review of amount of compensations, cases theft of valuable properly as well as beating each other. Magistrate courts are located in all 15 flood affected districts and these would help complainants to access the services of these magistrates in case such needs arise.

d) **Access to World Bank Grievance Redress system**. Malawi Government will also ensure that communities and individuals in project locations are aware of World Bank

Grievance Redress System. Government will disclose simple system of submitting issues of concern through letters or newspapers. People who believe that they are adversely affected by project activities carried by contractors or communities may submit complaints (through letters/phones) to Grievance Redress Service (GRS) World Bank Malawi office. The letters would be reviewed by offices. The system ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may also submit their complaint to the Bank's independent Inspection Panel, after having brought the complaint to the attention International Development Association through Malawi Country Office. Information on how to submit complaints to the Bank's Grievance Redress Service and the Bank Inspection Panel will be disclosed to the public during public disclosure of Environmental and Social Management Framework.

6. ENVIRONMENTAL AND SOCIAL SCREENING PROCESS FOR SUB-PROJECTS

The Malawi Environment Management Act (1996) and the Guidelines for Environmental Impact Assessment in Malawi (1997) prescribe steps for Environmental Impact Assessment for development projects in Malawi. However, these instruments do not contain guidelines regarding the screening, identification, assessment and mitigation of potential localized impacts of small-scale investments, where the project details and specific project sites are not known.

The Environmental and Social Screening Process outlined below complements Malawi's EIA procedures for meeting the environmental and social management requirements, as outlined in Appendix C of the EIA guidelines. The Environmental and Social Screening Process also meets the requirements of the World Bank's OP 4.01 Environmental Assessment for small to medium scale projects. It provides a mechanism for ensuring that potential adverse environmental and social impacts of public works funded sub-projects are identified, assessed and mitigated as appropriate, through an environmental and social screening process. In this way the results of the screening process can complement the national environmental assessment process.

6.1 Purpose of Environmental and Social Screening

Since the specific details and locations of the new construction and rehabilitation works are not known at this time, the environmental and social screening process (the screening process) is necessary for the review and approval of the engineering plans, for the development of new and the rehabilitation of existing facilities . The objectives of the screening process are to:

a) Determine the level of environmental work required (i.e. whether and to what extent an environmental assessment is required or not; the requirement and the scope of ESMP to be prepared; whether the application of simple mitigation measures will suffice; or whether no additional environmental work required);
b) Determine appropriate mitigation measures for addressing adverse impacts;
c) Determine which rehabilitation and re-construction activities are likely to have potentially significant negative environmental and social impacts;
d) Facilitate the review and approval of the screening results of the sub-projects.
e) Provide guidelines for monitoring environmental and social parameters during the construction, rehabilitation, operation of the sub-projects.

6.2 Steps in Environmental and Social Screening

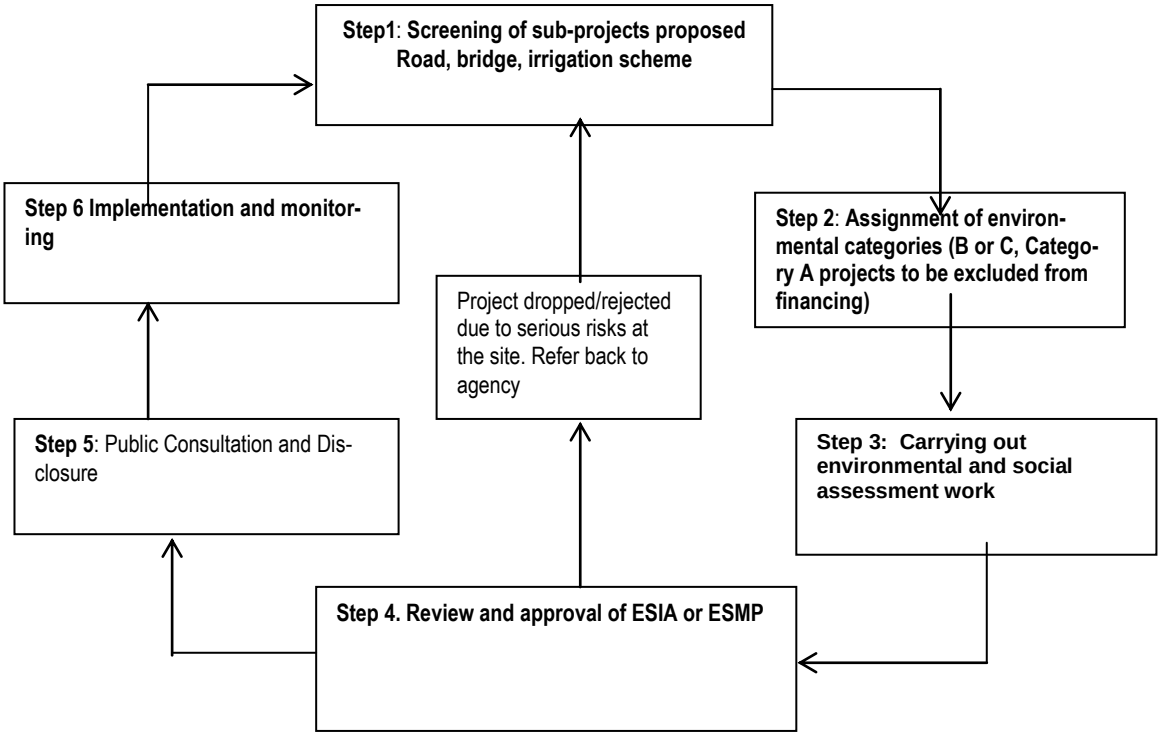
The extent of environmental work that might be required, prior to the commencement of construction and rehabilitation of the sub-projects will depend on the outcome of the screening process by District Environmental Sub Committee described below.

Step 1: Screening of Sub-project Activities and Sites

The first exercise is a desk appraisal of the construction and rehabilitation plans, including infrastructure designs. This will be carried out by the District Environmental Sub-Committee at the district level. The District Environmental Sub-Committee, which includes the Environmental District Officer, will carry out the initial screening in the field, through the use of the Environmental and Social Screening Form (Annex 3).

The screening form will facilitate the identification of potential environmental and social impacts, the determination of their significance, the assignment of the appropriate environmental category (consistent with OP 4.01), the determination of appropriate environmental and social mitigation measures, and the need to conduct an Environmental and Social Impact Assessment (ESIA). To ensure that the screening form is completed correctly for the various project locations and activities, training should be provided to members of the District Environmental Sub Committees as part of strengthening community level structures.

Figure 3: Flow Diagram Outline the Screening Activities for Proposed Sub-Projects



Step 2: Assigning the Appropriate Environmental Categories

The environmental and social screening form, when completed, will provide information on the assignment of the appropriate environmental category to a particular activity for construction of new facilities or rehabilitation of existing structures. The Environmental Sub-Committee will be responsible for assigning the appropriate environmental category to the proposed sub-projects consistent with the requirements of OP 4.01.

Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

An initial appraisal of potential sub-projects to be financed under the Malawi Floods Emergency Recovery Project has established that there will be no sub-project in each of project component to be classified as Category A under World Bank Operational Policy 4:01 (Environmental Assessment). This is because most of potential sub-projects will be small to medium size projects with site - specific impacts. Therefore Malawi Floods Emergency Recovery Project will not fund projects classified as Category A under Environmental Assessment (OP 4:01).

Category B: A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - 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 scope of environmental assessment for a Category B project may vary from project to project, but it is narrower than that of Category A. Like Category A, it examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

Given that most sub-projects in the MFERP will not have significant adverse environmental and social impacts requiring a separate EIA report, the screening process will recommend the assignment of (i) category B to sub-projects requiring only the application of simple mitigation measures (using the attached environmental and social checklist); and (ii) some other sub-projects may require a separate EIA report due to the severity of their potential adverse environmental and social impacts. All sub-projects which require land acquisition, impacts assets, causes a loss of livelihood, and /or restrict access to natural resources will require the preparation of an (Abbreviated) Resettlement Action Plan, based on the project RPF report.

Category C: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project. In cases where the results of the screening process indicate that the sub-project will not have significant adverse environmental and social impacts, if any, no additional environmental work will be required and sub-project implementation can proceed immediately.
The impacts from projects in Category C can be mitigated effectively through incorporation in bid documents. The contractor has to be empowered to address the impacts in course of project activities. Generic Environmental and Social Contractors Rules are attached as Annex 7. These can be adapted by implementing agencies to suite specific contracts of various sub-projects under MFERP.

In the event that an Abbreviated Resettlement Action Plans (RAPs) will have to be prepared for sub-projects, these would be reviewed and approved by the Commissioner for Lands and Valuation, consistent with the Resettlement Policy Framework, prior to initiating compensation and commencement of project activities.

Each local council will ensure that members of the District Environmental Sub Committees receive appropriate environmental and social training so that they can perform this function effectively. The Environmental District Officer is the secretariat to the District Environmental Sub Committees and will therefore take a leading role in capacity building issues of the District Environmental Sub –Committee.

Step 3: Carrying Out Environmental and Social Work

After reviewing the information provided in the environmental and social screening form, and having determined the appropriate environmental category, the District Environmental Sub-Committee will determine whether (a) the application of simple mitigation measures outlined in the Environmental and Social Checklist will suffice; (b) a comprehensive Environmental and Social Impact Assessment (ESIA) will need to be carried out, using the national ESIA guidelines; or (c) no additional environmental work will be required. EIA reports are first subjected to technical review by Technical Committee on the Environment (TCE) before they are recommended to National Council on the Environment (NCE) for approval.

Environmental and Social Checklists

Generic checklists on environmental and social impacts have been prepared and are attached in Annex 6. The checklists cover potential environmental and social impacts in construction works, as well as typical mitigation measures. The Environmental and Social Checklist will be completed by District Environmental Sub Committees. Some of the activities categorized as B might benefit from the application of mitigation measures outlined in the checklist.

In situations where the screening process identifies the need for land acquisition and the project impacts on assets, causes a loss of livelihood, and/or restricts access to natural resources, an Abbreviated Resettlement Action Plan shall be prepared consistent with the standards and guidelines set forth in the Resettlement Policy Framework and World Bank Involuntary Resettlement Policy (under OP 4.12).

Where standard designs will be used, the District Environmental Sub Committees, in consultation with the District Commissioner will assess impacts on the chosen land site and the community; and modify the designs to include appropriate mitigation measures. For example, if the environmental screening process identifies loss of fertile agricultural fields as the main impact from the construction of a water storage reservoir, the mitigation measure would be for the District Environmental Sub Committees and members of the planning team to choose a site further away from the fertile gardens so that the livelihood systems are maintained.

Environmental and Social Impact Assessments for Sub-Projects

The environmental and social impact assessment process will identify and assess the potential environmental and social impacts of the proposed construction activities, evaluate alternatives, as well as design and implement appropriate mitigation, management and monitoring measures. These measures will be captured in the Environmental and Social Management Plan (ESMP) which will be prepared as part of the environmental and social impact assessment process for each sub-project, based on environmental and social screening.

Preparation of the environmental and social impact assessment and environmental management plans will be carried out in consultation with the Ministry of Climate Change and Environmental Affairs including potentially affected persons. The District Environmental Sub Committees in close consultation with the Environmental Affairs Department and on behalf of the Local Council and Ministry of Education, Science and Technology will arrange for the (i) preparation of Environmental and Social Impact Assessment terms of reference; (ii) recruitment of a service provider to carry out the ESIA; (iii) public consultations; and (iv) review and approval of the ESIA through the national ESIA approval process. A parallel exercise of preparation of Resettlement Action Plan (RAP) will also commence, if determined as required by the procedure outlined in the RPF.

Step 4: Review and Approval of the Screening Activities

Under the guidance of the District Environmental Sub Committees, the relevant sector committees at the district level will review (i) the results and recommendations presented in the environmental and social screening forms; and (ii) the proposed mitigation measures presented in the environmental and social checklists.

Where an environmental impact assessment has been carried out, Environmental Affairs Department will review the reports to ensure that all environmental and social impacts have been identified and that effective mitigation measures have been proposed.

Step 5: Recommendation for Approval of environmental assessment reports

Based on the results of the above review process, and discussions with the relevant stakeholders and potentially affected persons, the District Environmental Sub Committees, in case of projects that don't require environmental assessment, will make recommendations to the District Executive Committee (DEC) for approval/disapproval of the screening results and proposed mitigation measures. As regards ESIA reports, Director of Environmental Affairs will recommend ESIA reports to the National Council for the Environment (NCE) for approval.

Step 6: Approval of the reports and environmental and social management plans

Approval based on the results of the environmental and social screening form will be done by the District Environmental Sub Committees based on submissions by the Environmental District Officer. Approval of the results of the ESIA will be provided by the National Council on the Environment (NCE). Approval of RAP will be done by the District Commissioner.

6.3 Consultations and Disclosure

According to Guidelines for Environmental Impact Assessment in Malawi (1997) and World Bank Environmental and Social Safeguards, public consultations are an integral component of the ESIA requirements. The guidelines identify the following principal elements:

- Developers are required to conduct public consultation during the preparation of Project Briefs, ESIA, and ARAPs.
- The Director of Environmental Affairs may, on the advice of the Technical Committee on Environment (TCE), conduct his or her own public consultation to verify the works of a developer.
- Formal EIA Reports documents are made available for public review and comments. Documents to which the public has access include Project Briefs, ESIA terms of reference, draft and final ESIA Reports, and decisions of the appropriate authorities regarding project approval. The Director of Environmental Affairs will develop practices and procedures for making these documents available to the public. It is very unusual that an ESIA will need to contain proprietary or market sensitive information (i.e. technological and financial) which a developer would prefer to remain confidential. Unless public knowledge of such information is crucial to project review, and as provided under Section 25(1) of the Environment Management Act, the Director will comply with requests that such information does not appear in an ESIA or ARAP.
- Certificates approving projects will be published by the developer and displayed for public inspection. Public consultations are critical in preparing an effective proposal for the construction and rehabilitation of the project activities. The first step is to hold public consultations with the local communities and all other interested/affected parties, during

the screening process and in the course of preparing the Environmental Impact Assessment Reports.

These consultations should identify key issues and determine how the concerns of all parties will be addressed in response to the Terms of Reference for the Environmental and Social Impact Assessment studies which may be required for construction and rehabilitation proposals.

Scope of Consultations in Environmental Assessment of Sub-Projects

Guidelines for Environmental Impact Assessment in Malawi (1997), provides details concerning the public consultation methods in Malawi. Such methods include press conferences, information notices, brochures/fliers, interviews, questionnaires and polls, open houses, community meetings, advisory committees, and public hearings.

The guidelines for public consultation include, among others, a requirement that major elements of the consultation program should be timed to coincide with significant planning and decision-making activities in the project cycle. In terms of Malawi's ESIA process, public consultation should be undertaken during (i) the preparation of the ESIA Reports terms of reference; (ii) the carrying out of an ESIA Reports; (iii) government review of an ESIA Reports; and (iv) the preparation of environmental and social terms and conditions of approval. Public consultations under sub-projects will be carried out by district environmental sub-committees, consultants and project committees as part of the environmental and social screening process of sub-projects, and the results will be communicated in an understandable language to potentially affected persons and beneficiaries.

6.4 Recommendations on Environmental Screening of Sub-Projects

Proposed sub-projects will consists of rehabilitation and re-construction of roads, bridges, irrigation schemes, water supply schemes, water intakes, schools and health centres. Potential environmental and social impacts are anticipated to be localized within the project sites. In this regard, detailed environmental and social management plans for these components will be adequate. There may be no need for detailed Environmental and Social Impact Assessment studies.

Generic Terms of Reference for an Environmental and Social Management Plan to be used for each of the subprojects.

Most of sub-projects (irrigation schemes, schools, health centre, rehabilitation of bridges). The impacts can be mitigated effectively if the contractor is empowered to address the impacts in course of project activities. Generic Environmental and Social Contractors Rules are attached as Annex 7. These can be adapted by implementing agencies to suite specific conditions.

7. POTENTIAL ENVIRONMENTAL & SOCIAL IMPACTS AND MANAGEMENT PLAN

A number of sub-projects have been proposed under the Malawi Floods Emergency Recovery Project. Sub-projects with significant scope of civil works are expected to generate significant environmental impacts in project locations. Examples of project activities include rehabilitation and re-construction of roads, bridges, irrigation schemes, schools, health centres, water supply schemes among others. On one hand, the changes are positive benefits to the public, and on the other hand, changes bring about negative externalities within the project impact area. The purpose of this chapter is to screen and highlight typical potential environmental and social impacts from main rehabilitation and re-construction works of MFERP.

7.1 Methodology of Impact Identification

The general approach adopted in screening potential environmental and social impacts of sub-projects (sub-components) of MFERP is to adopt a life cycle dimension of the project. In this approach, impacts are examined at each main phase of implementation cycle of project. In context of projects under MFERP, three logically linked phases are as follows.

a) **Planning and design phase**. Main activities include preparation of project plans and designs, recruitment of labourers, establishment of contractors camps

b) **Rehabilitation/re-construction phase.** Main activities are land clearance, excavations, compaction of road surface, building works, installation works, excavation of foundations, construction of new canals,.

c) **The operational and maintenance phase.** Main activities include use of rehabilitated infrastructure, use of services from schools, health centres, maintenance of roads, canals and pipes

Basically, the process of environmental screening involves exploration and examination possible changes and externalities to the public and environment. The following basic steps are followed in order to effectively scope the potential impacts of the project:

Step One: Assessment of baseline information in the project impact area

The exercise involves analysis of data and familiarization with information on the physical environment of the project area, human settlements and demographic pattern of the project area, economic and social conditions of the project area. The information has been used as reference point for evaluation potential changes and externalities which would result from project implementation.

Step Two: Review the main machinery and inputs in project activities

The necessity of this step was to examine the potential changes and impacts which could be created about in use of the proposed project machinery and inputs in activities within the project area. For example, the use of graders, trucks, caterpillars in construction works generate some environmental impacts. Use of agro-chemicals in irrigation schemes have impacts on water and wildlife around irrigation schemes.

Step Three: Review the nature and quantities of the main outputs

The aim of this step was to examine the potential changes and impacts which could be brought about by the delivery and use of such projects outputs. Examples of outputs are: new bridges, new irrigation schemes, new school blocks, new water supply schemes.

Step Four: Identification of the potential impacts from works

Upon examination of the scope and project implementation strategy, checklists can be used forecast the main impacts. One common checklist is the Leopold Type Matrix which guided on identification of primary impacts on components of environment from categories of infrastructure related projects. The identification of secondary level impacts and the social impacts will rely on the professional experience of experts.

7.2 Summary of Positive Socio-Economic Impacts of Project Activities

The identification of positive impacts of the MFERP has been tackled from assessment of the scope of social support (emergency recovery) for disaster affected communities, and also from the view point of economic contribution of the proposed rehabilitation of service infrastructure which is essential for local economy and long recovery of affected communities in the 15 flood affected districts. This section highlights the main positive impacts of the MFERP.

The MFERP will provide direct employment to flood affected people through labour intensive public works in the 15 flood affected districts. About US14$ million has been allocated for labour intensive public works activities within flood affected communities. Examples of public works activities are rehabilitation of community roads, drains, embankments, afforestation programmes, and rehabilitation of small scale irrigation schemes among others. Flood affected people will be employed for 20 days at a daily rate of about MK836.00. Flood affected households will receive cash and farm input in return for their labour on community infrastructure or asset. This component, therefore, intends to facilitate the restoration of livelihoods by providing household income and farm inputs. The programme would immediately benefit approximately 336,000 persons within 6 months.

Hired construction contractors for roads, bridges, schools and health centres will provide employment to rural people (including flood displaced people). About 7500 people may be employed in rehabilitation/ re-construction works in all 15 districts. Based on a monthly average wage of MK30,000.00 it is projected that every month, contractors would pay out about MK225 million would be paid out into pockets of construction laborers during rehabilitation period. Much of this money would be spent within flood affected communities/districts on disaster related recovery needs.

MFERP will contribute to food security among flood affected communities. The impact will be through supply of relief maize within the next 15 months and restoration of winter cropping (small scale irrigation schemes). The project will support restocking of Strategic Grain Reserve with more maize for emergency needs of flood affected people in the next agricultural season. The volume of maize will be about 60,000 metric tonnes. Distribution to flood affected households in the 15 districts will be done through the existing modalities using the World Food Programme (WFP) under the supervision of the Department of Disaster Management Affairs.

Support to Strategic Grain Reserve will contribute to stabilization of the food based inflation; and also ease the immediate fiscal burden for the government.

MFERP will contribute to rehabilitation of irrigation schemes in the 15 flood affected districts. In both short and medium term**,** rehabilitated irrigation schemes are expected to: (i) restore agricultural production by providing communities with inputs and enabling off-season planting; and (ii) restore household income and food through improved agricultural production.

MFERP will rehabilitate and re-construct better public school facilities in lower flood-risk areas in all 15 flood affected districts. New schools in Nsanje and Chikwawa will be designed and constructed as evacuation centers as well. The rehabilitation of public schools is expected to: (i) restore school enrolment and attendance rates; (ii) restore access to water and sanitation facilities for pupils; and (iii) ensure adequate all-year access to these basic services for the population of the 15 affected districts for the design period of 15 years.

New health centres will be designed and constructed as evacuation centers as well.

The rehabilitation of public health centres in the 15 flood affected districts is expected to: (i) restore health services and outpatient medical services (ii) restore access to primary health care for the rural poor households and (iii) ensure adequate all-year access to these basic services for the population of the 15 affected districts for the design period of 15 years.

MFERP will rehabilitate and re-construct better water supply schemes and boreholes in lower flood-risk areas in all 15 flood affected districts. The rehabilitation of public water supply schemes in the 15 flood affected districts is expected to: (i) restore potable water supply services (iii) restore access to sanitation and hygiene among the population of the 15 affected districts.

MFERP will rehabilitate and re-construct damaged roads and bridges in some flood affected districts. The proposed works include resealing and rehabilitation of the road and bridges for about 100 kilometers. The proposed rehabilitation of the road network will follow the “Build Back Better” approach to minimize damages from future flood risks, which will particularly entail the following measures: (i) raising the embankment height to protect the main pavement structure from recurrent flood waters; (ii) embankment protection works; (iii) reinforced sub-based layers with improved construction materials to avoid water induced damages; and (iv) improved designed and raising of drainage structures such as bridges, culverts and drifts. The economic justification of the works in the transport sector was also analyzed based on the avoided costs of reconstruction and increased periodic maintenance that would be required based on the historic levels of recurrent flooding.

The reconstruction and rehabilitation of the East Bank roads (60km) is expected to benefit road users and surrounding communities in Chikwawa, Nsanje and Thyolo Districts by facilitating traffic flow as well as trade and commerce. Transport efficiency will be enhanced, resulting in substantial transport cost savings and with social and economic benefits – not only for the flood-affected persons but other road users and surrounding communities, both in the short and long-run.

7.3 Summary of Potential Negative Environmental and Social Impacts

This step involved the systematic outline of the identified impacts, their sources/causes and the potential risks and effects of the impacts in the project impact area. This chapter presents samples screening of impacts for two main components of MFERP. These are rehabilitation/reconstruction of roads and bridge, and rehabilitation and re-construction of irrigation and water supply schemes.

Table 4 overleaf presents an outline of the predicted main negative impacts, the potential sources of the impacts from rehabilitation and re-construction works for public infrastructure such as roads and bridges. Table 5 outlines the predicted main negative impacts, the potential sources of the impacts from rehabilitation and re-construction works for irrigation schemes and water supply schemes, while Table 6 summarises impacts due to the rehabilitation of schools and health centres.

Table 4: Summary of potential environmental and social impacts from rehabilitation and re-construction works for public infrastructure – roads and bridges.

Component of the environment to be affected.	Potential impacts	Source of impacts/cause of the impacts	Potential severity ***Ranking Key:*** *Severe moderate marginal*
Vegetation Resources	Loss of vegetation (trees) and greenery beauty along the road during project period Spread of invasive alien plants	Increase in tree felling for fuel wood by increased labour force. Spread by contaminated construction equipment or workers through transfer of seed. Also resulting from murram sources brought in for roads, and fill	Moderate
Land and Soil resources	Creation of borrow pits.	Gravel excavation, top soil stripping and road gravel	Moderate
	Incision of road verges and culverts.	Construction of new roads side drains	Moderate
	Increase in surface runoff and soil erosion.	Clearance of vegetation at and compaction of roads	Moderate
	Pollution of land by solid wastes.	Disposal of solid and hazardous wastes from workers housing compounds/site camps/construction sites	Marginal
	Pollution of soil from contamination of oi and petroleum products	Leakages and spillage from vehicles and construction equipment, storage facilities and maintenance workshop	Moderate
Water Resources	Increase in suspended solids and sediments delivery into surface water bodies such as rivers and dams	Increase in surface discharge from premises. This would be due compaction of land within the premises.	Moderate
	Pollution of groundwater and surface water from sewage from offices, workmen's camps	Open defecation and urination by construction workers.	Moderate
	Pollution from spillage of petroleum products	Leakages or spillage of diesels and oils from storages and maintenance workshops.	Moderate
Ambient Air and Climate change	Dust emissions from construction works during construction phase	Project civil works/earthworks and heavy equipment in fields and on dusty roads during dry season	High
	Noise and vibrations from construction equipment and trucks	Project civil and earthworks during construction phase.	Marginal
	Emissions of greenhouse gases (carbaon dioxide, nitrogen and sulphur) into air.	Gases are released from exhausts of vehicles and construction plants	Moderate
Local Communities	Influx of migrant workers leading to competition of land and natural resources in the area	Migration of people and their families seeking employment.	Moderate

	Creation of unsightly workers camps with poor sanitary conditions within the periphery of construction sites	Migration of people and their families looking for job opportunities on construction sites.	Moderate
	Risks of interferences in local marriages	Extra marital affairs instigated by some migrant workers and due to increased disposable income	Moderate
	Risks of introduction and spread of communicable diseases and sexually	Interactions between migrant workers and local people; extra marital affairs by some migrant workers with local girls in the area	moderate
	Conflicts between migrant workers and local people	This may arise due to high social and economic differentiation between workers and local people; This may arise due competition for jobs and due to interferences in local marriages by unmarried migrant workers	Marginal
	Disruption of communal paths.	Closure of some local paths which pass through and across the road	Moderate
	Risks of poor sanitation within housing areas	Increase in employment of more workers may lead to establishment of overcrowded temporary housing compounds with poor sanitary facilities	Moderate
	Risks of child labour in some activities at road rehabilitation/upgrading activities	Recruitment of under aged persons and within senior staff quarters may encourage local children to drop out of school to work on construction sites	Marginal
Rural Livelihoods	Reduced availability of sources of fuel wood, mushrooms and medicinal	Clearance of natural trees within the area due to demand for fuel wood in the area.	Marginal
	Reduced availability of labour for local agricultural activities	Most people in the economic active age would be engaged in short term work at the cement works, thereby leading to shortage of labour in local gardens.	*Moderate*
	Increase in losses of assets such as chicken, doves and goats	Increase in theft in the area due to influx of migrant workers, some who may enhance theft of assets for sale.	Marginal
	Loss of properties due to relocation or demolition during road construction works	Structures along the roads	Moderate
Health and Safety	Risks of introduction and spread of communicable diseases and sexually	Interactions of migrant workers and local people; increase in sexual interactions between employed migrant workers and local women	Moderate
	Nuisance from emissions from burning of asphalt	Heating of bitumen by construction workers	Marginal
	Risks of occupational diseases for workers	Dust particles and contaminated air within premises can cause respiratory diseases among workers.	Marginal
	Risk of vehicle and machinery accidents	Increased presence of construction equipment and increased use of machinery	Marginal

Table 5: Summary of environmental and social impacts from rehabilitation/re-construction works on irrigation and water supply schemes.

Component of the environment to be affected.	Potential environmental and social impacts	Source of impacts/cause of the impacts	Potential severity. Ranking Key: very severe severe moderate marginal
Vegetation Resources	Extensive loss of natural vegetation and greenery beauty.	Clearance of vegetation within land and possible increase in deforestation for firewood due to increase in demand.	moderate
	Proliferation of invasive plants	Clearance of vegetation within project area for project site and demand for firewood, resulting in possible increase in opportunistic species. Also resulting from murram sources brought in for roads, and fill	moderate
Wildlife Resources	Loss of habitat for wild animals	Clearance of vegetation within project area.	moderate
	Loss of biodiversity such as snakes, butterflies, mice and micro-organisms	Clearance of vegetation within project area.	moderate
	Human/wildlife conflict	Crop raiding by wildlife (e.g. hippos, elephants, buffalo)	
Land and Soil Resources	Creation of burrow pits.	Top soil stripping; excavation of construction soil and road gravel	Moderate
	Incision of road verges and culverts.	Construction of scheme roads	Moderate
	Increase in surface runoff and soil erosion.	Clearance of vegetation and poor compaction of roads	Moderate
	Pollution of soil from contamination of oil and petroleum products	Leakages and spillage from earthmoving and agricultural equipment, storage facilities and maintenance workshop	Moderate
	Risks of degradation of soil	Excessive use of agrochemicals, over utilization of soils resulting in nutrient depletion	Moderate
	Disturbance to the growth of micro - organisms	Land clearance and application of agrochemicals to soils.	Moderate
Water Resources	Water quality and quantity for downstream human and ecological water uses depleted	Abstraction of water for irrigation and water supply	Moderate
	Increase in suspended solids and sediments delivery into surface water bodies	Increase in surface discharge.	Moderate
	Pollution of groundwater and surface water resources	Open defecation and urination by construction workers. Spillage from petroleum products.	Moderate
	Pollution from spillage of petroleum products	Leakages or spillage of diesels and oils from storages and maintenance workshops.	Moderate
	Pollution from agrochemicals	Spillage, improper use and disposal of agrochemicals	Moderate
	Increase in siltation and deterioration of water quali-	Increase in soil erosion and debris from the cleared land	Marginal

	ty in streams within the area		
	Water logging and salinisation of the soils of the area	Excessive water supply to the scheme area Excessive compaction of the scheme are and poor internal drainage. Excessive application of chemical fertilizers within the scheme	Moderate
	Risks of loss of aquatic fauna within streams with-in the project area	Increase in pollution from agrochemical residues	Moderate
Ambient Air	Dust emissions in the area	Project civil works/earthworks and agriculture machinery in fields and on dusty roads during dry season	Marginal
	Noise pollution	Project civil works/earthworks and trucks to and from the scheme	Marginal
	Greenhouse emissions	From project vehicles and project machinery	Marginal
Local Communities (social impacts)	Disputes in allocation of land for production within the scheme	Corrupt practices and favoritism by those who would be charged in land allocation to potential smallholder growers. Inclusion of migrant people in allocation of land at the schemes	Moderate
	Marginalisation of vulnerable groups including women in land allocation (blocks) at the scheme	Corruption and favoritism in the process of land allocation and registra-tion of growers Inclusion of migrant people/workers in land allocation on the schemes	Moderate
	Influx of migrant workers leading to competition of land and natural resources in the area	Migration of people and their families looking for job opportunities on the schemes	Moderate
	Risks of interferences in local marriages	Extra marital affairs by some migrant workers at the scheme and from increased disposable income	Moderate
	Risks of introduction and spread of communicable diseases and sexually transmitted diseases includ-ing HIV/AIDS	Interactions between migrant workers and local people; extra marital affairs by some migrant workers	moderate
	Conflicts between migrant workers and local people	This may rise due to high social and economic differentiation between scheme workers and local people; Competition for jobs at the scheme, migrant workers and local people	Moderate
	Closure of communal foot paths	Closure of some paths on the land of the proposed project site.	Moderate
	Increase in losses of assets such as chicken, doves and goats	Increase in theft in the area due to influx of migrant workers, some who may enhance theft of assets for sale.	Moderate
	Risks of child labour	High income opportunities on schemes may motivate local children to drop out of school to work on schemes	Marginal
Rural Livelihoods	Reduced availability of sources of fuel wood and medicinal plants	Clearance of vegetation within some parts of the scheme.	marginal
	Loss of land for food crop production	Conversion of some land for irrigation infrastructure.	marginal
	Loss of land for grazing livestock and goats	Clearance of grass and vegetation within the 500 hectares where some local communities graze livestock and goats.	marginal
	Reduced labour force for food production in small-	People working of project activities rather than in fields	Moderate

	holder farms		
Health and Safety risks to workers and local people	Introduction and spread of communicable diseases and sexually transmitted diseases including HIV/ and AIDS	Interactions of migrant workers and local people; increase in sexual intercourses between employed migrant workers and local women	marginal
	Risks of poisoning from agro chemicals by workers	Accidental spillages and exposure to agro chemicals in storage and during use.	marginal
	Local people exposure and poisoning from agro-chemicals	Accidental spillage of agro-chemicals and unauthorised access to agro-chemicals in storage facilities.	marginal
	Physical injuries and cuts – falling from machinery	Accidents in falling from machinery vehicles; skin cuts during harvesting of cane.	marginal
	Prevalence of pools of stagnant water and multiplication of mosquitoes in the area	Poor internal soil drainage within the irrigated scheme, roads and cane fields	Moderate
	Multiplication of harmful pests –rodents and snakes	Within mature fields	Marginal

Table 6: Summary of potential environmental and social impacts from rehabilitation and re-construction works for schools and health centres.

Component of the environment to be affected.	**Potential impacts.**	**Source of impacts/cause of the impacts**	**Potential severity.** ***Ranching Key:*** *severe* *moderate* *marginal*
Vegetation Resources	Loss of vegetation (trees) and greenery beauty around the site	Increase in tree felling for fuel wood by increased labour force.	Marginal
Land and Soil resources	Erosion	Excavation of borrow pits and land leveling	Marginal
	Increase in surface runoff and soil erosion.	Earthworks, clearance of vegetation at and improper compaction of roads	Marginal
	Pollution of land by solid wastes.	Disposal of hazardous and non hazardous solid wastes from health centres, school canteens, housing compounds/site camps	Moderate
	Pollution of soil from contamination of oil and petroleum products	Leakages and spillage from vehicles	Marginal
Water Resources	Increase in suspended solids and sediments delivery into surface water bodies such as rivers and dams	Erosion, earthworks.	Marginal
	Pollution of groundwater and surface water	Disposal of hazardous and non-hazardous solid wastes from health centres, school canteens, housing compounds/site cam. Open defecation and urination by construction workers. Increase in surface discharge from premises	Marginal
Ambient Air and Climate change	Dust emissions from construction works	Project civil works / earthworks, particularly in the dry season	Marginal
	Emissions of greenhouse gases (carbon dioxide, nitrogen and sulphur) into air.	Gases are released from exhausts of vehicles and construction plants	Marginal
Local Communities	Influx of migrant workers leading to competition of land and natural resources in the area	Migration of people and their families seeking employment.	Marginal
	Risks of interferences in local marriages	Extra marital affairs instigated by some migrant workers.	Marginal
	Risks of introduction and spread of communicable diseases and STDs	Interactions between migrant workers and local people; extra marital affairs	Marginal

	Conflicts between migrant workers and local people	This may rise due to high social and economic differentiation between workers and local people; This may arise due competition for jobs and due to interference in local marriages by unmarried migrant workers	Marginal
	Risks of poor sanitation within housing areas	Increase in employment of more workers may lead to establishment of overcrowded temporary housing compounds with poor sanitary facilities	Moderate
	Risks of child labour in some activities at road rehabilitation works	Recruitment of under aged persons and within senior staff quarters may encourage local children to drop out of school to work on construction sites	Marginal
	Reduced availability of labour for local agricultural activities	Most people in the economic active age would be engaged in short term project activities and employment opportunities, thereby leading to shortage of labour for agricultural work.	Marginal
	Increase in losses of assets such as chicken, doves and goats	Increase in theft in the area due to influx of migrant workers	Marginal
Health and Safety	Risks of introduction and spread of communicable diseases and sexually	Interactions of migrant workers and local people; increase in sexual interactions between employed migrant workers and local women	Moderate
	Risks of occupational diseases for workers	Dust particles and contaminated air within premises can cause respiratory diseases among workers.	Marginal

7.4 Environmental and Social Management Plans

An environmental and social management plan has to be prepared for identified impacts for each sub-project under MFERP. This chapter presents of Environmental and Social Management Plan for potential environmental and social impacts from the three main components of MFERP, ie. the rehabilitation/reconstruction of roads and bridges; rehabilitation and re-construction of irrigation and water supply schemes; and rehabilitation and re-construction of schools and health centres.

It should be pointed out that rehabilitation/reconstruction of roads and bridges, rehabilitation/re-construction of irrigation schemes and water supply schemes and rehabilitation/re-construction of schools and health centres will constitute the bulk of the civil works in the project activities. These components will pose the main negative environmental and social impacts.

Table 7 presents an Environmental and Social Management Plan for rehabilitation and re-construction works for public infrastructure such as roads and bridges; Table 8 presents an Environmental and Social Management Plan for rehabilitation and re-construction works for irrigation schemes and water supply schemes; Table 9 presents an Environmental and Social Management Plan for rehabilitation and re-construction works for schools and health centres.

Tables 10, 11 and 12 summarize the environmental and social monitoring plans for each of these three project components.

These ESMPs have been prepared for reference purposes. Detailed ESMPs for the sub-projects will be prepared by the implementing agencies once the specific sub-project designs are known, and prior to implementation.

Table 13 presents an overall project level monitoring plan for the MFERP which can be used as a basis for evaluating the success and achievements of the Project at the end of the 5 year project period in relation to the project objectives as well as environmental and social sustainability of its activities.

Table 7: Environmental and Social Management Plan for rehabilitation and re-construction works for public infrastructure –roads/bridges.

Identified Negative Impacts for mitigation	Recommended mitigation measures	Recommended Period of implementation	Budget Estimates (in MK)	Responsible Authority for Implementation of the measures	Performance indicator
Impacts on vegetation resources.					
Loss of vegetation and greenery beauty through clearance of trees on the site	a) Use of firewood from exotic tree species such as pipe trees and blue gum trees at contractors camp b) Promote the use of energy efficient cooking stoves for workers.	During road construction phase	K200, 000.00	• Contractor	100% workers using energy efficient stoves
Risks of spread of invasive alien plants/seeds in the area	a) Migrant workers to ensure clean outer garments and personal effects to get rid of alien plants and seeds b) Clean construction equipment used elsewhere before use on the site c) Quality of gravel/murram used for roads should be screened				No. of sites where invasive species are observed
Impacts on climate change					
Increase in greenhouse gas emissions from the area.	a) Use of well-maintained construction equipment or project vehicles. b) Prohibit idling of vehicles.	During road construction phase	MK200,000.00	Project Contractor	Total amount of fuel usage by contractor's plant and equipment
Impacts on land and soils.					
Increase in surface runoff and soil erosion due to increase in exposure of soil	a) Construction of drainage structures b) Compaction of the road and drains c) Stone pitching on road side cut in mountains, and catchwater drains to reduce impact of fast flowing runoff	During road construction phase	MK300000	Contractor	No. of new locations along the roads where erosion is noted each month.
Creation of borrow pits and risks of soil erosion.	a) Back fill/landscape pits immediately after excavation works are complete; b) Regenerate natural vegetation in all borrow pits after construction works	During road construction phase	MK2,000,000.00	Project Contractors	Number of borrow pits back-filled and revegetated
Incision of road verges and culverts.	a) Installation of storm water outlets involving a flared apron to spread out flow at all culvert outlets. b) Establishment of grass lining further	During road construction phase	MK2,000,000.	Project Contractors	No. of new locations where erosion is noted each month.

	downstream to provide good protection again erosion.				
Increase in brick making by local communities around roads.	a) Use stones or cement bricks for main drain construction b) Sensitization of the communities on dangers of haphazard brick making and sand mining.	During road construction phase	Budget in construction budget	Project Contractors	No. of brick making businesses along the roads
Pollution of soil from contamination of petroleum products	a) Proper storage facilities for oils/fuels diesel and minimize spillage – bunded containment where necessary. Minimize spillage from machinery on site through proper maintenance, procedures for handling and storing oils/fuels b) Fence off storage facilities for fuel to reduce unauthorized personnel	During construction	MK200,000	Project Contractors	No. of spills recorded per week.
Impacts on water resources.					
Increase in suspended solids and sediments into surface water resources.	a) Construct drainage structures	During road construction phase	Included under Construction budget	Project Contractors	No. of new locations along the roads where erosion is noted each month.
Pollution from human waste within the area	a) Provision of appropriate pit latrines for construction workers giving consideration to soil types and distance to nearest surface water sources.	During road construction phase	MK200,000	Project Contractors	100% of the pit latrines for construction workers are in good working condition
Pollution from spillage of petroleum products	a) Security of storage facilities for oils, diesel at camp and minimize spillage b) Use of well-maintained vehicles and construction equipment	During road construction phase	Included in section 4.5 above	Project Contractors	No. of spills recorded per week.
Impacts on air.					
Dust emissions in the area	a) Suppress of dusts from dry civil works by application of water. b) Provide protective wear to workers to protect workers from contamination	During road construction phase	MK200,000.00	Project Contractors	No. of times per week bowser applies water to worked sections 100% workforce using PPE
Noise from construction machinery and transportation trucks in the area	a) Provide protective wear to workers during civil works to protect ear drums. b) Sensitize neighbouring communities	During road construction phase	MK400,000.00	Project Contractors	100% workforce using PPE

	about noise nuisance.				
Social impacts on local communities.					
Influx of migrant workers leading to competition of land and natural resources in the area	a) Recruitment of local people as general labour force as priority.	During road construction phase	MK50,000.00	Project Contractors	Number of local people employed.
Risks of interferences in local marriages	a) Recruitment of local people as general labour force as priority. b) Sensitization of migrant workers to desist from interferences in local marriages.	During road construction phase	Not applicable	Project Contractors Local village headmen	Number of local people employed. Number of sensitization meetings.
Risks of introduction and spread of communicable diseases and sexually transmitted diseases including HIV/AIDS	a) Put in place HIV/AIDS Work Policy and operationalise it for benefit of workers b) Establishment of roads HIV/AIDS Workers' committee. c) Weekly sensitization meetings among roads workers, on dangers of HIV/AIDS. d) Distribution of condoms and IEC materials for free of workers, and, local people around e) Paste stickers with HIV/AIDS messages on project vehicles and construction equipment	During road construction phase	MK200,000.00	Project Contractors Local village headmen District HIV/AIDS Coordinator	Number of sensitization meetings Number workers and condoms distribution.
Conflicts between migrant workers and local people	a) Recruitment of local people as general labour force as priority b) Sensitization of migrant workers to respect local cultures and live with local people in harmony.	During road construction phase	Not applicable	Project Contractors Local village headmen	Number of local people employed. Number of sensitization meetings
Closure of communal paths	a) Provide footbridges across side drains for use by local people	During road construction phase	MK500000	Project Contractors	Number of footbridges constructed across side drains
Risks of child labour	a) Recruitment of workers through District Labour Office. No recruitment of school going children or persons below 18 years for any work at roads. b) Put a sign board at contractors camps " **No employment for person under age of 18 years**"	During road construction phase	MK200,000	Project Contractors District Labour Officer	No. of children under 18 years working on project sites
Loss of trees, structures, land uptake for gravel pits	c) Compensation for land uptake for gravel pits, and contractor's yard/laydown areas. d) Compensation for small structures, trees and cash crops (miscellaneous)	During road construction	MK400,000.00	Project Contractor	Number structures ,trees compensated Number of borrow pits compensated

Impacts on health and safety of workers/people					
Spread of sexually transmitted infections including HIV and AIDS	a) Adoption and operation of HIV and AIDS Policy for road b) Distribution of condoms and IEC materials to both men and female workers c) Civic education on dangers of the HIV and AIDS among the workers and local people	During road construction phase	Budget included above	Project Contractors District HIV/AIDS Coordinator	Number workers distributed with condoms every month Number of civic education meetings.
Prevalence of pools of stagnant water and multiplication of mosquitoes	a) Regular flushing of pools of stagnant water. b) Distribution of mosquito nets to workers	During road construction phase	MK100,000.00	Project Contractors	Zero stagnant pools observed. 100% workers are provided with mosquito nets.
Nuisance from smoke and smut from burning of bitumen	a) Use of cold mix asphalt or concrete slabs for road surface which is noted heated b) Use of slurry bound macadam surfacing which is not heated c) Provision of protective wear to workers.	During road construction phase	MK150,000.00	Project Contractors	100% workers using PPE
Physical injuries from accidents– fall from trucks and machinery etc	a) Provide protective clothing to workers	During road construction phase	MK200,000.00	Project Contractors	100% workers using PPE
Exposure and poisoning from construction materials and dust	a) Provision of adequate protective clothing to workers in use of construction materials (eg cement) such as mouth masks, goggles and gloves. b) Adequate training of workers calibration of equipment, handling storage materials c) Restriction of access to storage of cement to trained staff only	During road construction phase	MK200,000.00	Project Contractors	100% workers using PPE No. of H&S induction training sessions held
Solid wastes and sewage from contractors camp	a) Refuse pits for disposal of organic waste b) Ventilated pit latrines for workers	During road construction phase	MK300,000.00	Project Contractors	No. of pits emitting foul odour 100% of workers pit latrines are in good working condition
			6,000,000.00		

Table 8: Environmental and Social Management Plan for rehabilitation/re-construction works on irrigation and water supply schemes

Identified Negative Impacts for mitigation	Recommended mitigation measures	Recommended Period of implementation	Budget Estimates (in MK)	Responsible Authority for Implementation of the measures	Performance indicator
Impacts on vegetation resources.					
Loss of vegetation and greenery beauty through clearance of trees on the site Risks of spread of invasive alien plants/seeds in the area	• Use of firewood from exotic tree species such as pipe trees and blue gum trees at contractors camp • Promote the use of energy efficient cooking stoves for workers. • Migrant workers to ensure clean outer garments and personal effects to get rid of alien plants and seeds • Clean construction equipment used elsewhere before use on the site • Quality of gravel/murram used for roads should be screened	Rehabilitation and re-construction phases	MK300, 000.	• Scheme Management	Area of vegetative buffer zones created No. of tree nurseries established at the scheme. 100% workers using energy efficient stoves No. of sites where invasive species are observed
Impacts on wildlife Resources					
• Loss of habitat for wild animals • Loss of biodiversity (mice,snakes)	• Maintain some trees around the scheme blocks as biodiversity belts/corridors • Afforestation within local villages around the scheme for fuel wood supply to local people.	Rehabilitation and re-construction phases	MK200,000.	• Scheme Management	Area of vegetative buffer zones created Number of trees planted in villages around the scheme
Impacts on land and soils.					
• Increase in surface runoff and soil erosion due to increase in exposure of soil	• Implement soil conservation measures within all the fields (check dams, box ridges) • Regular tilling of land for infiltration	During rehabilitation phase and operational phase	MK200,000.	Scheme Management	No. of new locations where erosion is noted each month
• Creation of burrow pits.	• Back fill and regenerate natural vegetation in all burrow pits after construction works	During construction phase	MK100,000.	• Project Contractors and Scheme Management	Number of burrow pits backfilled
• Incision of road verges and culverts.	• Installation of storm water outlets involving a flared apron to spread out flow at all culvert outlets. • Establishment of appropriate grass lining further downstream to provide good pro-	During road reconstruction	MK200,000.	Project Contractors	No. of new locations where erosion is noted each month.

	tection again erosion.				
• Increase in brick making by local communities around scheme.	• Use cement bricks for main canal construction • Sensitization of the communities on dangers of haphazard brick making and sand mining.	During scheme rehabilitation activities phase	construction budget	• Project Contractors	No. of brick making businesses along the roads
• Pollution of soil from contamination of petroleum products	• Proper storage facilities for oils, diesel and minimize spillage. Minimize spillage from machinery on site through proper maintenance • Install a collector in workshops/garages to collect oil during maintenance works.	During scheme operational phase	MK200,000.	• Scheme Management • Earth moving Contractors	No. of spills recorded per week
• Risks of water logging and salinization	• Apply correct amount of water to irrigated area and correct amount of fertilizers • Ensure sufficient infield drainage and minimize over-irrigation. • Use overhead irrigation system (centre pivot) • Add lime to soil where there are problems of salinization	During scheme operational phase	MK1000, 000. MK5,000,000	Scheme Management	No. of water logged locations noted per week Area of salinized soil Area of degraded soil restored
• Disturbance to the growth of micro - organisms	• Use correct amount of fertilizers in fields • Use of a combination of organic fertilizers; minimum tillage and recycling of crop residue	During scheme operational phase	Not applicable	Scheme Management	Total amount of each type of input used per month.
Impacts on water resources.					
• Depleted flow in rivers downstream of schemes	• Maintain environmental flow to ensure downstream human and ecological demands are not compromised	During scheme operational phase	Part of scheme design	Scheme Management	Determined environmental flow
• Increase in suspended solids and sediments delivery into surface water resources.	• Water harvesting measures (box ridges, check dams) and improvement of soil infiltration	During scheme operational phase	MK300,000.00	Scheme Management	No. of new locations along where erosion is noted each month.
• Pollution from human waste within the area	• Provision of appropriate pit latrines to construction workers and cane cutters.	During operational phase	MK200,000	Contractors Scheme Management	100% of the pit latrines for workers are in good working condition
• Pollution from spillage of petroleum products	• Proper storage facilities for oils, diesel . • SOPs for handling, storage and disposal of oils and fuels to minimize spillage • Install an oil collector/separator in workshops/garages to collect oil during	During scheme operational phase	MK500,000	Scheme Management	No. of spills recorded per week

	maintenance works.				
• Exposure and pollution from agro-chemicals	• Use environmentally friendly agro-chemicals, registered with Pesticide Board of Malawi • Train workers in proper storage, handling and use to minimize the spillage. • Storage of agro –chemicals within spacious and well designed storage facilities. • Prepare SOP for chemical spill response and clean up.	During scheme operational phase	MK500,000	Scheme Management	No. of skin ailments and respiratory disease reported among workforce
• Increase in siltation and deterioration of water quality in streams nearby	• Maintenance of vegetative buffer zone along sugarcane fields to minimises soil erosion into river. • Check out soil erosion on the scheme	During scheme operational phase	Not applicable	Scheme Management	Area of vegetative buffer zones created
• Risks of loss of aquatic fauna within streams within the scheme and Shire River	• Minimise level of pollution of all drains discharging in to Streams • Check soil erosion from the scheme	During scheme operational phase	Not applicable	Scheme Management	No. of incidences of dead fish in streams
Impacts on air.					
• Dust emissions in the area	• Suppress of dusts from dry civil works by application of water. • Provide protective wear to cane cutters to protect workers from contamination	During land preparation phase	MK100,000	Project Contractors Scheme Management	No. of times per week bowser applies water to worked sections 100% workforce using PPE
• Noise from construction machinery and transportation trucks in the area	• Provide protective wear to workers during civil works to protect ear drums	During land preparation phase	MK100,000	Project Contractors Scheme Management	100% workforce using PPE
Social impacts on local communities.					
• Loss of land for food crop production	• Reserve at least 20% of land for irrigated food crop production on the scheme for each growers • Construct a diversion canal to convey water to gardens surrounding Phase IV Scheme for food production	During operational stage	MK500,000	Scheme Management	Area of land reserved for irrigated food crops
• Loss of land for livestock grazing.	• Village headmen to show alternative land for grazing of livestock	During planning stage	Not applicable	Local village headmen	Area of land allocated for grazing of livestock
• Marginalisation of women in allocation of land for crop production	• Allocation of land to be restricted to households who own land on the site. No migrant people/workers.	During planning stage	MK100,000	Scheme Management District Commissioner Local villageheadmen	% of land reserved for female headed households

	• Allocation system to be done by tripartite committee (drawn from KSCGL, local headman and representative of DC) • Reserve number of pieces of land for women participation.				
• Disputes in land allocation, ownership and benefits from sales of produce	• Register all households and sizes of their gardens on the site. Use this register as basis of allocation of land at scheme. • Disputes to be presided over by tripartite committee-. • Committee to define and agree with growers on the formulae of distribution of benefits	During planning and scheme development stages	MK100,000	Scheme Management District Commissioner Local villageheadmen	100% households registered.
• Influx of migrant workers leading to competition of land and natural resources in the area	• Recruitment of local people as general labour force as priority.	During operational phase	MK100,000	Scheme Management	Number of local people employed.
• Risks of interferences in local marriages	• Recruitment of local people as general labour force as priority. • Sensitization of migrant workers to desist from interferences in local marriages.	During operational phase	Not applicable	Scheme Management Local village headmen	Number of local people employed. Number of sensitization meetings.
• Risks of introduction and spread of communicable diseases and sexually transmitted diseases including HIV/AIDS	• Put in place HIV/AIDS Work Policy and operationalise it for benefit of workers • Establishment of scheme HIV/AIDS Workers' committee. • Regular sensitization meetings among scheme workers, on dangers of HIV/AIDS. • Distribution of condoms and IEC materials for free of workers, and, local people around	During operational phase	MK1,000,000	Scheme Management Local village headmen District HIV/AIDS Coordinator	Number of sensitization meetings Number workers and condoms distribution.
• Conflicts between migrant workers and local people	• Recruitment of local people as general labour force as priority • Sensitization of migrant workers to respect local cultures and live with local people in harmony.	During operational phase	MK100,000	Scheme Management Local village headmen	Number of local people employed. Number of sensitization meetings
• Closure of communal paths	• Provide alternative foot paths through the schemes or along the perimeter of the scheme.	During operational phase	Not applicable	Scheme Management	Number of alternative foot paths
• Risks of child labour	• Recruitment of workers through District Labour Office. No recruitment of school going children or persons below 18 years	During operational phase	MK100,000	Scheme Management District Labour Officer	No. of children under 18 working on project sites

	for any work at scheme.				
Health and Safety of workers/people					
• Spread of sexually transmitted infections including HIV and AIDS	• Adoption and operation of HIV and AIDS Policy for the scheme • Distribution of condoms and IEC materials to both men and female workers • Civic education on dangers of the HIV and AIDS among the workers and local people	During construction and operational stage	MK500,000	Scheme Management District Labour Officer	Number workers distributed with condoms every month Number of civic education meetings.
• Prevalence of pools of stagnant water and multiplication of mosquitoes	• Regular flushing of pools of stagnant water. • Distribution of mosquito nets to workers	During operational stage	MK100,000	Scheme Management	Zero stagnant pools observed.
• Risks of accidents –children and livestock falling in canals	• Provide culverts and foot bridges over canals for pedestrians and livestock	During operational	MK500,000	Scheme Management	Number of foot bridges and culverts over main canal
• Physical injuries from accidents– fall from trucks and machinery etc	• Provide protective clothing to workers	During construction	MK100,000	Scheme Management	100% workforce using PPE
• Exposure and poisoning from agro-chemicals	• Provision of adequate protective clothing to workers in use of agro-chemicals such as mouth masks, goggles and gloves. • Prepare SOPs for handling, storage and disposal of agrochemicals. • Provide adequate training of workers calibration of equipment, handling storage of agrochemicals. • Restriction of access to storage of agro-chemicals to trained staff only	During operational	MK500,000	Scheme Management	100% workforce using PPE No. workers given H&S induction training
			MK15,000,000		

Table 9: Environmental and Social Management Plan for rehabilitation and re-construction works for public schools and health centres

Identified Negative Impacts for mitigation	Recommended mitigation measures	Recommended Period of implementation	Budget Estimates (in MK)	Responsible Authority for Implementation of the measures	Performance indicator
Impacts on vegetation resources.					
Loss of vegetation and greenery beauty through clearance of trees on the site Risks of spread of invasive alien plants/seeds in the area	• Use of firewood from exotic tree species such as pipe trees and blue gum trees at contractors camp • Promote the use of energy efficient cooking stoves for workers. • Migrant workers to ensure clean outer garments and personal effects to get rid of alien plants and seeds • Clean construction equipment used elsewhere before use on the site • Quality of gravel/murram used for roads should be screened	During road construction phase	MK200, 000.00	Project Contractors	100% workers using energy efficient stoves No. of sites where invasive species are observed
Impacts on climate change					
Increase in greenhouse gas emissions from the area.	• Ensure vehicles are well maintained	During road construction phase	MK200,000.00	Project Contractor	Total amount of fuel usage by contractor's plant and equipment
Impacts on land and soils.					
Increase in surface runoff and soil erosion	Construction of drainage structures, • Compaction of the road and drains	During road construction phase	MK400,000.00	Project Contractors	No. of new locations along the roads where erosion is noted each month.
Creation of borrow pits and risks of soil erosion.	• Back fill and regenerate natural vegetation in all borrow pits after construction works	During road construction phase	MK200,000.00	Project Contractors	Number of borrow pits back-filled and revegetated
Increase in brick making by local communities around roads.	• Use cement bricks or stabilised soil blocks for classrooms and health centres	During road construction phase	Not applicable	Project Contractors	No. of brick making businesses along the roads
5.0 Impacts on water resources.					

Pollution from human waste within the area	• Provision of appropriate pit latrines to construction workers	During road construction phase	MK100,000	Project Contractors	100% of the pit latrines for construction workers are in good working condition
Impacts on air.					
Dust emissions in the area	• Suppress of dusts from dry civil works by application of water. • Provide protective wear to workers to protect workers from contamination	During road construction phase	MK200,000.00	Project Contractors	No. of times per week bowser applies water to worked sections 100% workers using PPE
• **Social impacts on local communities.**					
Risks of interferences in local marriages	• Recruitment of local people as general labour force as priority. • Sensitization of migrant workers to desist from interferences in local marriages.	During road construction phase	Not applicable	Project Contractors Local village headmen	Number of local people employed. Number of sensitization meetings.
Risks of introduction and spread of communicable diseases and sexually transmitted diseases including HIV/AIDS	• Put in place HIV/AIDS Work Policy and operationalise it for benefit of workers • Establishment of roads HIV/AIDS Workers' committee. • Weekly sensitization meetings among roads workers, on dangers of HIV/AIDS. • Distribution of condoms and IEC materials for free of workers, and, local people around • Paste stickers with HIV/AIDS messages on project vehicles and construction equipment	During road construction phase	MK300,000.00	Project Contractors Local village headmen District HIV/AIDS Coordinator	Number of sensitization meetings Number workers and condoms distribution.
Conflicts between migrant workers and local people	• Recruitment of local people as general labour force as priority • Sensitization of migrant workers to live with local people in harmony.	During road construction phase	Not applicable	Project Contractors Local village headmen	Number of local people employed. Number of sensitization meetings
Risks of child labour	• Recruitment of workers through District Labour Office. No recruitment of	During road construction phase	MK200,000	Project Contractors District Labour Officer	No. of children under 18 years working on project

	school going children or persons below 18 years for any work at roads. • Put a sign board at contractors camps " **No employment for person under age of 18 years**"				sites
Impacts on health and safety of workers/people					
Spread of sexually transmitted infections including HIV and AIDS	• Adoption and operation of HIV and AIDS Policy for road • Distribution of condoms and IEC materials to both men and female workers • Civic education on dangers of the HIV and AIDS among the workers and local people	During road construction phase	Budget included in item 7.2 above	Project Contractors District HIV/AIDS Coordinator	Number workers distributed with condoms every month Number of civic education meetings.
Prevalence of pools of stagnant water and multiplication of mosquitoes	• Regular flushing of pools of stagnant water. • Distribution of mosquito nets to workers		MK100,000.00	Project Contractors	Zero stagnant pools observed. 100% workers are provided with mosquito nets.
Exposure and poisoning from construction materials and dust	• Provision of adequate protective clothing to workers in use such as mouth masks, goggles and gloves.	During road construction phase	MK200,000.00	Project Contractors	100% workers using PPE
			MK8,600,000.00		

Table 10: Environmental and Social Monitoring Plan of mitigation measures for re-construction works for public infrastructure – roads/bridges sub-projects.

Identified Negative Impacts for mitigation	Recommended mitigation measures	Monitoring indicators	Frequency of monitoring	Monitoring authorities and budget estimates	Means of verifications
Impacts on vegetation resources.					
Loss of vegetation and greenery beauty through clearance of trees on the site Risks of spread of invasive alien plants/seeds in the area	• Use of firewood from exotic tree species such as pipe trees and blue gum trees at contractors camp • Promote the use of wood – energy efficient cooking stoves for workers. • Migrant workers to ensure clean out clothes to get rid of alien plants • Clean construction equipment used elsewhere before use on the site	• .Volume of firewood from exotic tree species • Number of stoves used • Number of migrant workers who clean clothes • Use of clean equipment	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Impacts on climate change					
Increase in green house gas emissions from the area.	• Ensure construction equipment and project vehicles are well maintained.	• Number of new vehicles on site • Number maintained construction plants	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Impacts on land and soils.					
Increase in surface runoff and soil erosion due to increase in exposure of soil	• Construction of drainage structures • Compaction of the road and drains • Stone pitching on road side cut in mountains	• Length of water drains • Number of culverts	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Creation of borrow pits and risks of soil erosion.	• Back fill and regenerate natural vegetation in all borrow pits after construction works	• Number of borrow pits backfilled	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Incision of road verges and culverts.	• Installation of storm water outlets involving a flared apron to spread out flow at all culvert outlets. • Establishment of grass lining further downstream to provide good protection again erosion.	• Storm water outlets. • Grass lining in water outlets	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Increase in brick making by local communities around roads.	• Use stones or cement bricks for main drain construction	• Cement bricks used in construction of drains	Every six months	• Environmental Affairs Dept	• Inspections

	• Sensitization of the communities on dangers of haphazard brick making			• PIU • MK200,000.00	• Records
Pollution of soil from contamination of petroleum products	• Proper handling, storage and disposal facilities for oils, diesel to minimize spillage. Containment of bulk fuel. • Minimize spillage from machinery on site through proper maintenance • Fence off storage facilities for fuel to reduce unauthorized personnel	• Upright fuel tanks installation	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections
Impacts on water resources.					
Increase in suspended solids and sediments into surface water resources.	• Construct drainage structures	• Length of storm water drains • Number of culverts..	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Pollution from human waste within the area	• Provision of appropriate pit latrines to construction workers	• Pit latrines for construction workers at camp	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Pollution from spillage of petroleum products	• Security of storage facilities for oils, diesel at camp and minimize spillage • Use of well-maintained vehicles and construction equipment	• Upright fuel tanks • Used oil kept in drums for recycle elsewhere • Used of well-maintained vehicles/equipment	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Impacts on air.					
Dust emissions in the area	• Suppress of dusts from dry civil works by application of water. • Provide protective wear to workers to protect workers from contamination	• Number of days per month for application of water to dry civil works • Number of protective wear e.g dust coats	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Noise from construction machinery and transportation trucks in the area	• Provide protective wear to workers during civil works to protect ear drums	• Number of ear muff for workers	Every six months	• Environmental Affairs Dept • PIU	• Inspections • Records

				• MK200,000.00	
Social impacts on local communities.					
Influx of migrant workers leading to competition of land and natural resources in the area	• Recruitment of local people as general labour force as priority.	• Number of local people employed.	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Risks of interferences in local marriages	• Recruitment of local people as general labour force as priority. • Sensitization of migrant workers to desist from interferences in local marriages.	• Number of local people employed. • Number of sensitization meetings.	Every six months	• Environmental Affairs Dept • MK200,000.00	• Inspections • Records
Risks of introduction and spread of communicable diseases and sexually transmitted diseases including HIV/AIDS	• Put in place HIV/AIDS Work Policy and operationalise it for benefit of workers • Establishment of roads HIV/AIDS Workers' committee. • Weekly sensitization meetings among roads workers, on dangers of HIV/AIDS. • Distribution of condoms and IEC materials for free of workers, and, local people around • Paste stickers with HIV/AIDS messages on project vehicles and construction equipment	• HIV/AIDS Work Place Policy for project . • HIV/AIDS Workers Committee • Number of sensitization meetings • Number condoms distribution. • Number stickers pasted on vehicles	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Conflicts between migrant workers and local people	• Recruitment of local people as general labour force as priority • Sensitization of migrant workers to respect local cultures and live with local people in harmony.	• Number of local people employed. • Number of sensitization meetings	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Closure of communal paths	• Provide footbridges across the side drains for use by local people	• Number of footbridges across side drains	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records

Risks of child labour	• Recruitment of workers through District Labour Office. No recruitment of school going children or persons below 18 years for any work at roads. • Put a sign board at contractors camps " **No employment for person under age of 18 years**"	• Minimum age of workers at works. • Sign board in place	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Loss of trees, structures, land uptake for gravel pits	• Compensation for land uptake for gravel pits, contractor's laydown areas. • Compensation for small structures, trees and cash crops (miscellaneous)	• Number structures ,trees compensated • Number of borrow pits compensated	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Spread of sexually transmitted infections including HIV and AIDS	• Adoption and operation of HIV and AIDS Policy for road • Distribution of condoms and IEC materials to both men and female workers • Civic education on dangers of the HIV and AIDS among the workers and local people	• HIV and AIDS Policy in place. • Number workers distributed with condoms every month • Number of civic education meetings.	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Prevalence of pools of stagnant water and multiplication of mosquitoes	• Regular flashing of pools of stagnant water. • Distribution of mosquito nets to workers	• Number of pools of stagnant water flashed	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Nuisance from smoke and smut from burning of bitumen	• Use of cold mix asphalt or concrete slabs for road surface which is noted heated • Use of slurry bound macadam surfacing which is not heated • Provision of protective wear to workers.	• Use of alternative surfacing materials	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Physical injuries from accidents– fall from trucks and machinery etc	• Provide protective clothing to workers	• Number of protective wear with workers	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records
Solid wastes and sewage from contractors camp	• Refuse pits for disposal • Ventilated pit latrines for workers	• Number of toilets • Number of refuse pits • Number of ventilated pit latrines	Every six months	• Environmental Affairs Dept • PIU • MK200,000.00	• Inspections • Records

Table 11: Environmental and Social Monitoring Plan for mitigation measures for rehabilitation/re-construction works - Irrigation and water supply schemes Sub -projects

.Identified Negative Impacts for mitigation	Recommended mitigation measures	Monitoring indicators	Frequency of monitoring	Monitoring authorities and budget estimates	Means of verifications
Impacts on vegetation resources.					
Loss of vegetation and greenery beauty on the site	• Maintain some trees as buffer zones around the scheme • Establishment tree nurseries including tree seedlings for natural trees • Promote the use of wood – energy efficient cooking stoves among schemes workers and local communities around the scheme.	• Vegetative buffer zones • Tree nurseries established at the scheme. • Number of energy –efficient stoves used by scheme workers.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Impacts on wildlife Resources					
• Loss of habitat for wild animals • Loss of biodiversity mice,snakes	• Maintain some trees around the scheme blocks as tree belts • Afforestaton within local villages around the scheme for fuel wood supply to local people.	• Vegetative buffer zones around the scheme. • Number of trees planted in villages around the scheme	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Impacts on land and soils.					
• Increase in surface runoff and soil erosion due to increase in exposure of soil	• Implement soil conservation measures within all the fields (check dams, box ridges) • Regular tilling of land for infiltration	• Regular harrowing and tilling of land • Soil conservation measures – box ridges, check dams.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Creation of burrow pits.	• Back fill and regenerate natural vegetation in all burrow pits after construction works	• Number of burrow pits back-filled	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Incision of road verges and culverts.	• Installation of storm water outlets involving a flared apron to spread out flow at all culvert outlets. • Establishment of appropriate grass lining further downstream to provide good protection again erosion.	• Storm water outlets. • Grass lining in water courses	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Increase in brick making by local communities around scheme.	• Use cement bricks for main canal construction • Sensitization of the communities on dangers of haphazard brick making and sand mining.	• Cement bricks used in construction of canals	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

• Pollution of soil from contamination of petroleum products	• Proper storage facilities for oils, diesel and minimize spillage. Minimize spillage from machinery on site through proper maintenance • Install a collector in workshops/garages to collect oil during maintenance works.	• Fuel tanks well constructed no leakages. • Fuel collectors installed in garage/workshops	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Risks of water logging and salinization	• Apply correct amount of water to irrigated area and correct amount of fertilizers • Ensure sufficient infield drainage and minimize over-irrigation. • Use overhead irrigation system (centre pivot) • Add lime to soil where there are problems of salinization	• Regulation of correct amount of water and fertilisers to soils • Centre Pivot irrigation system in place • Degraded soil reclaimed.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Disturbance to the growth of micro - organisms	• Use correct amount of fertilizers in fields • Use of a combination of organic fertilizers; minimum tillage and recycling of crop residue	• Use of organic fertilizers, minimum tillage and residue recycling methods	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Impacts on water resources.					
• Increase in suspended solids and sediments delivery into surface water resources.	• Water harvesting measures (box ridges, check dams) and improvement of soil infiltration	• Water harvesting/land conservation measures in place • Regular tillage	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Pollution from human waste within the area	• Provision of appropriate pit latrines to construction workers and cane cutters.	• Pit latrines for construction workers and can cutters.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Pollution from spillage of petroleum products	• Proper storage facilities for oils, diesel and minimize spillage • Install an oil collector in workshops/garages to collect oil during maintenance works.	• Proper fuel tanks with no leaks • Oil collectors installed in garage	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Exposure and pollution from agro-chemicals	• Use environmentally friendly agro-chemicals, registered with Pesticide Board of Malawi • Train workers in proper storage, handling and use to minimize the spillage. • Storage of agro –chemicals within spacious and well designed storage facilities.	• Use of registered agro - chemicals	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

• Increase in siltation and deterioration of water quality in streams nearby	• Maintenance of vegetative buffer zone along sugarcane fields to minimises soil erosion into river. • Check out soil erosion on the scheme	• Vegetative buffer zone along cane fields	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Risks of loss of aquatic fauna within streams within the scheme and Shire River	• Minimise level of pollution of all drains discharging in to Streams • Check soil erosion/soil contamination from the schemes	• Reports of loss of aquatic life in streams	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Impacts on air.					
• Dust emissions in the area	• Suppress of dusts from dry civil works by application of water. • Provide protective wear to cane cutters to protect workers from contamination	• Application of water to dry civil works • Use of protective wear by workers such as dust coats	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Noise from construction machinery and transportation trucks in the area	• Provide protective wear to workers during civil works to protect ear drums	• Use of protective clothes in ear to protect eardrums	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Social impacts on local communities.					
• Loss of land for food crop production	• Reserve at east 20% of land for irrigated food crop production on the scheme for each growers • Construct a diversion canal to convey water to gardens surrounding Scheme for food production	• Reserve of land for irrigated food crops • Extension of canal to gar-dens of local people around the scheme	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Marginalisation of women in alloca-tion of land for crop production	• Allocation of land to be restricted to households who own land on the site. No migrant people/workers. • Allocation system to be done by tripartite committee (, local headman and repre-sentative of DC) • Reserve number of pieces of land for women participation.	• Restriction of land allocation to original owners of land. • Establishment of tripartite committee for land alloca-tion. • Percentage of land reserved for female headed house-holds	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Disputes in land allocation, ownership and benefits from sales of produce	• Register all households and sizes of their gardens on the site. Use this register as basis of allocation of land at scheme. • Disputes to be presided over by tripartite committee-. • Committee to define and agree with growers on the formulae of distribution of benefits	• Register for all owners of land and sizes of their piec-es. • Establishment o tripartite committee • Definition of formulae for distribution of benefits.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

• Influx of migrant workers leading to competition of land and natural resources in the area	• Recruitment of local people as general labour force as priority.	• Number of local people employed.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Risks of interferences in local marriages	• Recruitment of local people as general labour force as priority. • Sensitization of migrant workers to desist from interferences in local marriages.	• Number of local people employed. • Number of sensitization meetings.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Risks of introduction and spread of communicable diseases and sexually transmitted diseases including HIV/AIDS	• Put in place HIV/AIDS Work Policy and operationalise it for benefit of workers • Establishment of scheme HIV/AIDS Workers' committee. • Regular sensitization meetings among scheme workers, on dangers of HIV/AIDS. • Distribution of condoms and IEC materials for free of workers, and, local people around	• HIV/AIDS Work Place Policy for the scheme . • HIV/AIDS Workers Committee and peer groups at scheme • Number of sensitization meetings • Number workers and condoms distribution.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Conflicts between migrant workers and local people	• Recruitment of local people as general labour force as priority • Sensitization of migrant workers to respect local cultures and live with local people in harmony.	• Number of local people employed. • Number of sensitization meetings	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Closure of communal paths	• Provide alternative foot paths through the schemes or along the perimeter of the scheme.	• Number of alternative foot paths	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Risks of child labour	• Recruitment of workers through District Labour Office. No recruitment of school going children or persons below 18 years for any work at scheme.	Minimum age of workers at the scheme.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Spread of sexually transmitted infections including HIV and AIDS	• Adoption and operation of HIV and AIDS Policy for the scheme • Distribution of condoms and IEC materials to both men and female workers • Civic education on dangers of the HIV and AIDS among the workers and local people	HIV and AIDS Policy in place. Number of condoms every month Number of civic education meeting.	Every six months	Environmental Affairs Dept PIU District HIV/AIDS officer MK200,000.00	Inspections Records
• Prevalence of pools of stagnant water and multiplication of mosquitoes	• Regular flushing of pools of stagnant water. • Distribution of mosquito nets to workers	Number of pools of stagnant water flashed	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

• Physical injuries from accidents– fall from trucks and machinery etc	• Provide protective clothing to workers	Number of protective wear with workers	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
• Exposure and poisoning from agro-chemicals	• Provision of adequate protective equip-ment. • Integrated pest management methods	Protective wear Training of farmers in IPMP	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

Table 12: Environmental and Social Monitoring Plan for mitigation measures for rehabilitation works for education and health sector sub-projects.

Identified Negative Impacts for mitigation	Recommended mitigation measures	Monitoring indicators	Frequency of monitoring	Monitoring authorities and budget estimates	Means of verifications
Impacts on vegetation resources.					
Loss of vegetation and greenery beauty through clearance of trees on the site	• Use of firewood from exotic tree species such as pipe trees and blue gum trees at contractors camp • Promote the use of wood – energy efficient cooking stoves for workers.	• .Use of firewood from exotic tree species at camp site • Number of stoves used	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Impacts on climate change					
Increase in greenhouse gas emissions from the area.	• Use of new or well-maintained vehicles.	• Number of new vehicles on site • Number of well-maintained construction plants	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Impacts on land and soils.					
Increase in surface runoff and soil erosion	• Construction of drainage structures • Compaction of the road and drains	• Length of water drains • Number of culverts	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Creation of borrow pits and risks of soil erosion.	• Back fill and regenerate natural vegetation in all borrow pits after construction works	• Number of borrow pits back-filled	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Increase in brick making by local communities around roads.	• Use of cement bricks or stabilized soil blocks for classrooms and health centres	• Cement bricks used in construction	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

Impacts on water resources.					
Pollution from human waste within the area	• Provision of appropriate pit latrines to construction workers	• Pit latrines for construction workers at camp	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Impacts on air					
Dust emissions in the area	• Suppress of dusts from dry civil works by application of water. • Provide protective wear to workers to protect workers from contamination	• Application of water to dry civil works • Use of protective wear by workers such as dust coats	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Social impacts on local communities.					
Risks of interferences in local marriages	• Recruitment of local people as general labour force as priority. • Sensitization of migrant workers to desist from interferences in local marriages.	• Number of local people employed. • Number of sensitization meetings.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Risks of introduction and spread of communicable diseases and sexually transmitted diseases including HIV/AIDS	• Put in place HIV/AIDS Work Policy and operationalise it for benefit of workers • Establishment of roads HIV/AIDS Workers' committee. • Weekly sensitization meetings among roads workers, on dangers of HIV/AIDS. • Distribution of condoms and IEC materials for free of workers, and, local people around • Paste stickers with HIV/AIDS messages on project vehicles and construction equipment	• HIV/AIDS Work Place Policy for road . • HIV/AIDS Workers Committee and peer groups at roads • Number of sensitization meetings • Number workers and condoms distribution.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Conflicts between migrant workers and local people	• Recruitment of local people as general labour force as priority • Sensitization of migrant workers to live with local people in harmony.	• Number of local people employed. • Number of sensitization meetings	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Risks of child labour	• Recruitment of workers through District Labour Office. No recruitment of school going children or persons below 18 years for any work at roads. • Put a sign board at contractors camps " **No employment for person under age**	• Minimum age of workers at road works. • Sign board in place	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

	of 18 years"				
Spread of sexually transmitted infections including HIV and AIDS	• Adoption and operation of HIV and AIDS Policy for road • Distribution of condoms and IEC materials to both men and female workers • Civic education on dangers of the HIV and AIDS among the workers and local people	• HIV and AIDS Policy in place. • Number workers distributed with condoms every month • Number of civic education meeting.	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Prevalence of pools of stagnant water and multiplication of mosquitoes	• Rehabilitation of pools of stagnant water. • Distribution of mosquito nets to workers	• Number of pools of stagnant water rehabilitated	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records
Exposure and poisoning from cement	• Provision of adequate protective clothing to workers in use such as mouth masks, goggles and gloves.	• Protective wear in use for construction workers	Every six months	Environmental Affairs Dept PIU MK200,000.00	Inspections Records

Table 13: Overall Project Level Monitoring Plan

Environmental/Social Aspects	Proposed Aspects for Monitoring	Performance Indicator	Baseline data	Responsibility for monitoring	Monitoring means	Recommended frequency of monitoring
Poverty	Poverty status in Project area	- Changes in key socio-economic characteristics of flood affected communities	- Current income and expenditure levels; - Current employment status/patterns	Environmental Affairs Dept PIU	Socio economic study	Baseline immediately, follow up study in 5 yrs
		- No. of people employed in alternative livelihood activities	- Zero people employed in alternative livelihood activities			
Agriculture	Crop production (irrigated and rainfed)	- Changes in agricultural productivity by crop type	- Current production levels by crop type (irrigated and rainfed)	Environmental Affairs Dept PIU	Socio-economic study	Baseline immediately, follow up study in 5 yrs
Water resources	Characteristics of water resources in the catchment area	- Changes in flow of rivers supplying water to irrigation and water supply schemes - Changes in rainfall patterns	- Current flow measurements in scheme rivers - Current rainfall measurements - Water quality measurements	Environmental Affairs Dept PIU	Study to analyse changes hydro-meteorological conditions	Baseline immediately, water quality analysis to be done annually.
	Water supply	- Changes in the number of households with access to clean water	- Current number of households with access to clean reliable water supply (data from Ministry of Water/District Water Office)	Environmental Affairs Dept PIU	Study to analyse changes hydro-meteorological conditions	Baseline immediately, analysis to be done annually.
Health	STD/HIV/AIDS rates of infection	- No. of reported cases in Project area	- Base year data from Ministry of Health/District HIV/AIDS coordinator (prevalence rate) for each district	Environmental Affairs Dept PIU	Medical records	Annually
	Water borne diseases	- Trends in cases of malaria - Trends in cases of cholera - Trends in cases of diarrhea	- Base year data for each district from Ministry of Health/District Health Office for each disease	Environmental Affairs Dept PIU	Medical records	Annually
	Health status	- Changes in nutrition status - Changes in <5 child mortality rates	- Base year data for each district from Ministry of Health/District Health Office for each disease	Environmental Affairs Dept PIU	Medical records	Baseline immediately, follow up study in 5 yrs
	Persistent Organic Pollutants/ agrochemicals in water sources	- Concentrations of POPs, phosphates, nitrates	- Current concentrations of POPs, phosphates and nitrates in water sources	Environmental Affairs Dept PIU	Water quality analysis	Water quality analysis for POPs and heavy metals to be done twice a year.

Education	Education status in Project area	- Changes in enrolment, attendance, gender balance, drop out rates	- Current education status (enrolment, attendance, gender balance, drop out rates)	Environmental Affairs Dept PIU	Socio economic study	
Biodiversity	Flora and fauna in Project area	- Changes in flora and fauna composition in key Project ecosystems (lakes, wetlands, forests, national parks)	- No. and occurrence of animal and plant species currently in each ecosystem	Environmental Affairs Dept PIU	Study reports (data can be obtained from other agencies)	Baseline immediately, follow up study in 5 yrs
		- Changes in invasive aquatic weed species, composition and cover	- No. and extent of invasive species			
Climate change	Climatic factors: temperature, rainfall	- Changes in temperature, rainfall	- Current temperature and rainfall measurements	Environmental Affairs Dept PIU	Measurements - this data will be collected as part of the IWRM Component	Baseline immediately, analysis to be done annually

7.5 Definition of Roles, Responsibilities and Budgets Estimates

The successful implementation and monitoring of the environmental and social management framework would depend on collaboration of different stakeholders at district level, national level with Ministry of Finance, Economic Planning and Development. This is necessary because the implementation of the activities would require inputs, expertise and resources which would be adequately taken care of if the concerned parties work together. The following sections outline some of the selected and recommended activities to be done by each stakeholder in the environmental activities.

District level
Members of Environmental District Sub Committee which will consist of at least three technical specialists and led by the Environmental District Officer, will be responsible for carrying out the environmental and social screening of planned activities using forms in Annex 3. The Committee may include the District Forestry Officer, District Water Officer, Director for Planning and Development, District Agriculture Officer, District Lands Officer.

Members of Environmental District Sub Committee will be responsible for determining the appropriate environmental mitigation measures the proposed sub-projects and to arrange for the appropriate level of environmental work to be carried out.

The budget for the district environmental offices in all 15 flood affected districts is estimated at US$400,000.00. Malawi Government will provide financial resources to all Environmental District Offices to supervise adherence to environmental and social safeguards by contractors during implementation of Malawi Floods Emergency Recovery Project.

National level
Director of Environmental Affairs will be responsible for monitoring the synchronizations of recommended environmental and social mitigation measures within the sites for public works projects during construction, rehabilitation of existing facilities and during decommissioning phases of the construction and rehabilitation works. The annual budget estimate at the national level is: US$400,000.00. Malawi Government will provide financial resources to Environmental Affairs Department in Ministry of Natural Resources, Energy and Mining to supervise the preparation and approval of Environmental and Social Impact Assessment reports and Environmental and Social Management Plans for sub-projects during implementation of Malawi Floods Emergency Recovery Project. Environmental Affairs Department will also provide technical support towards Project Implementation Unit to ensure adequate integration of environmental considerations in planning, design and implementation of the sub-projects

8. CAPACITY DEVELOPMENT, TRAINING AND RESOURCES

It is envisaged that to strengthen capacity in the implementation of ESMP two institutions will need capacity building: the District Environmental Sub Committees. The District Environmental Sub Committees will have an orientation on environmental and social safeguards. This orientation will be a sub-set of the orientation of District Executive Committee on proposed construction works and rehabilitation and re-construction works in districts will run for 1 day. The participants to the course will include the five local council sector heads from Forestry, Environment, Agriculture, Health and Water. Regional meetings will be organized and facilitated by Department of Environmental Affairs, and Department of Lands and Valuation. The cost of the orientation in all 15 flood affected districts is estimated to be about U$300,000.00 based on costs of training with similar duration. Topics to be covered include:

- Infrastructural development activities under MFERP;
- Guidelines for Environmental and Social Screening process;
- Preparation of Environmental and Social Management Plan for construction/ rehabilitation works;
- Gender assessment and mainstreaming within project activities;
- HIV /AIDS mainstreaming within project activities.
- Pesticide Management Plans

Specific information, education and communication materials will be prepared to guide on matters of environmental and social screening to councils, non-governmental organizations. Materials will include fact sheets and briefing notes.

8.1 Technical Support in Preparation of Detailed Environmental and Social Management Plans for Sub-Projects

Consultant has to prepare detailed environmental and social management plans for the sub-projects such as roads and bridges, rehabilitation of small and large scale irrigation schemes. The budget for one such assignment is estimated at US$25000.00**.** The budget for ESMP will be included in the construction contracts.

Malawi Government has agreed to provide financial resources to implement activities listed above. Ministry of Finance, Economic Planning and Development will provide the resources to Project Implementation Unit in each financial year in order to carry out environmental and social impact assessment reports and environmental and social management plans for sub-projects.

9. WORK PLAN AND BUDGET

PIU and local government officials at district level will be responsible in the implementation of capacity development activities on Environmental and Social Management Framework. Budget estimated costs for the various activities under this program will be built in the overall project budget. The core activities will be as follows:

- Sensitization of stakeholders on environmental and social management framework for the project.
- Training on environmental and social screening of sub-projects
- Preparation of environmental and social impact assessment reports.
- Preparation of environmental and social management plans for sub-projects
- Preparation of environmental and social clauses for sub-projects
- Training of contractors on environmental and social impacts
- Supervision and monitoring on implementation of mitigation measures
- Workshops for review of the activities

The recommended budget for main activities within each year is summarized in Table 14 overleaf. Malawi Government has agreed to provide financial resources to implement activities listed above. Ministry of Finance, Economic Planning and Development will provide the resources to Project Implementation Unit each financial year in order to implement the list activities above.

Table 14 :Summary of budget estimates for environmental and social management activities per component of the project

Component of the project	Proposed Environmental and Social Management activities	Annual budget estimates (in US$)			
		2015/2016	2016/2017	2017/2018	2018/19
Component I : Livelihood Restoration and Food Security (Budget US$29.00 million)					
	• Orientation of staff and communities on ESMF and best practices	50,000.00	50,000.00	50,000.00	50,000.00
a) Labour Intensive community	• Environmental and Social Screening of sub-projects				
Infrastructure activities	• Orientation on risks and mitigation measures on HIV/AIDS				
b) Restocking of grain reserves	• Preparation of PMP, ESMPs for sub-projects				
	• Pest and disease control measures in maize purchase at AHLCE, ACE, NFRA and storage – grain reserves				
	• Supervision, monitoring of activities				
	• Sensitization of communities on ESMP and HIV/AIDS				
Component 2: Infrastructure Rehabilitation and Reconstruction (Budget US$43.00 million)					
a) Rehabilitation of Roads and bridges	• Orientation of staff and communities on ESMF and best practices	150,000.00	100,000.00	100,000.00	100,000.00
b) Rehab of Irrigation Schemes	• Environmental and social screening of sub-projects				
c) Rehabil. Of Water supply schemes	• Preparation of ESIA Reports and ESMPs for sub-projects				
d) Water Resource Magmnt	• Supervision and monitoring of implementation of measures				
e) Rehabl. Education/ health facilities	• Orientation on risks and mitigation measures on HIV/AIDS				
	• Training of contractors on ESMPs and HIV/AIDS mitigation				
Component 3: Promotion of Disaster Resilience (Budget US$ 4.00 million)					
	• Orientation on ESMF and best practices	20,000.00	20,000.00	20,000.00	20,000.00
a) Institutional Strengthening	• Environmental and social screening of sub-projects				
In Dept of Disaster Magmnt	• Orientation on risks and mitigation measures on HIV/AIDS				
b) Multi-sector Design of					
Disaster Resilient Infrastructure					
		220,000.00	170,000.00	170,000.00	170,000.00

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World Bank **Operational Policies, OP 4.09 Pest Management**

ANNEXES

Annex 1: Terms of Reference for Environmental and Social Management Framework

MALAWI FLOODS EMERGENCY RECOVERY PROJECT - PROJECT ID 1431 .

1.0 INTRODUCTION.

The Government of the Republic of Malawi is seeking the financial support of US$80.00 million from the International Development Association (IDA) of the World Bank Group for The Malawi Floods Emergency Recovery Project (MFERP). The Malawi Floods Emergency Recovery Project (MFERP) will seek to address critical flood-prone areas by providing immediate support to the affected populations in restoring their livelihoods, as well as rehabilitate critical infrastructure essential for public services and economic recovery in flood-affected areas. The project will also seek to increase the institutional capacity of the government's post-disaster recovery system and promote long-term resilience.

In 2014/2015 rainy season, Malawi has experienced one of worst floods in the last twenty years with severe impacts on human settlement, public infrastructure and the environment. Reports indicate that over 100 people have died and over 100 people are missing due to floods. And b end of February 2915, an estimated 336,000 people were displaced and accommodated in camps. Preliminary post disaster assessment results show extensive networks of roads and bridges, rural irrigation canals, public schools, public hospitals, trading centres, government offices have been destroyed in about 15 districts in Malawi.

Development Objectives of Malawi Floods Emergency Recovery Project are as follows:

a) To address critical flood-prone areas by providing immediate support to the affected populations in restoring their livelihoods, as well as rehabilitate critical infrastructure essential for public services and economic recovery in flood-affected areas.
b) To increase the institutional capacity of the government's post-disaster recovery system and promote long-term resilience

1.1 Component 1: Livelihoods Restoration and Food Security

1. **Sub-component 1.1: Labor-Intensive Community Infrastructure Repair – US$14 million**: This sub-component will provide immediate assistance for livelihood-supporting and income-generating activities. It will enable beneficiaries to meet their basic requirements by providing farm inputs for the next season in return for their participation in labor-intensive community infrastructure repair schemes. These interventions will create jobs while simultaneously repairing and restoring community infrastructure. The beneficiaries will be able to utilize their earnings for meeting their food and basic household needs.

2. **Sub-component 1.2: Restocking of the Strategic Grain Reserve (SGR) – US$15 million**: An estimated 150,000 to 200,000 households could be in need of food assistance for part or all of next year. It is therefore anticipated that an additional 20,000 to 25,000 tons of maize should be released from the SGR for food assistance. To maintain the SGR at its optimal level, the project will contribute to its replenishment for an estimated amount of 60,000MT. This quantity is however adjustable depending on prices during the periods of procurement. Purchase of maize will be done through the existing national mechanisms in compliance with the Bank's guidelines for procurement of goods. Release of maize for food assistance will follow existing procedures based on the PDNA and Malawi Vulnerability Assessment Committee (MVAC) estimates. Distribution will be done through the existing modalities using World Food Programme (WFP) under the supervision of the Department of Disaster Management Affairs

1.2 Component 2: Infrastructure Rehabilitation and Reconstruction

3. **Sub-component 2.1: Repair and Reconstruction of Roads and Bridges – US$24 million:** This sub-component will support the rehabilitation and reconstruction of selected critical access infrastructure, including secondary roads, bridges and other drainage structures.

4. **Sub-Component 2.2: Irrigation and Rural Water Supply and Sanitation – US$5 million:** This sub-component will fund the operational restoration of selected and prioritized irrigation and water supply schemes that have been destroyed or damaged by the floods. This will entail the repair and rehabilitation of:

(a) *Critical irrigation schemes and infrastructure ($3.5 m)*: This can include headwork's, flood protection bunds, main canal sections, drains and in-field infrastructure. All of the irrigation schemes proposed to be rehabilitated are those that are smallholder farmer managed and range from mini schemes (below 10 hectares) to about 400 hectares. Permanent repair will be required, especially for recently constructed and revived schemes that were showing high productivity and have incurred a significant setback.

(b) *Water Supply and Sanitation Schemes and infrastructure ($1.5 m)*: This can include water intake structures, water treatment plants, conveyance systems, storage systems, distribution networks, pumping stations, wells and boreholes.

5. **Sub-Component 2.3: Water Resource Management – US$6million:** This sub-component will finance flood mitigation works, including: (a) river training works; (b) river bank protection, afforestation of river banks and localized embankment repair works in critical flooding rivers; (c) creation and restoration of storm-water drainage; (d) restoration of riparian forests, and; (e) flood protection bunds around critical infrastructure – designed to reduce risk levels and in line with the Flood Risk Management Action Plan for the Shire Basin.

6. **Sub-Component 2.4: Rehabilitation and Reconstruction of Education and Health Facilities – US$8 million:** This sub-component will primarily include the rehabilitation and in-situ reconstruction of a proportion of the schools and health facilities damaged or destroyed by the floods In line with PDNA results, the sub-component will seek to reconstruct and restore the functionality of damaged schools and health facilities (including their upgrading) as well as finance the replacement of school learning materials, medical equipment and medical supplies. This sub-component will also incorporate the element of Building Back Better, such as right sizing and right siting, as well as promoting disaster preparedness and risk reduction activities. In addition to the above reconstruction and major rehabilitation, and if needed, part of the funding could also be used for repair of partially damaged education and health facilities.

1.3 Component 3: Promoting Disaster Resilience

7. **Sub-Component 3.1: Institutional Strengthening of DoDMA – US$2 million:** This sub-component will provide technical assistance to strengthen the institutional set-up and operational capacities of DoDMA for post-disaster response and recovery. This will include: (a) improving data preparedness and capacity development for post-disaster needs assessment; (b) strengthening recovery planning and implementation; and (c) enhancing disaster response systems.

8. **Sub-Component 3.2: Multi-sector Design of Disaster Resilient Infrastructure – US$2 million:** This sub-component will provide technical assistance to different departments and ministries for the development and institutionalization of disaster and climate-resilient design standards for infrastructure construction in the future. This could include the design of roads and drainage infrastructure and public buildings, such as schools, health centers and government offices.

Component 4: Program Management – US$4 million

9. This component will finance the following activities: (a) incremental operating costs of the Project Implementation Unit (PIU); (b) technical designs for the reconstruction and rehabilitation of infrastructure included under various Project components; (c) supervision quality control and contract management of reconstruction and rehabilitation subprojects; (d) audit, studies and assessments required under various Project components.

2.0 ENVIRONMENTAL SAFEGUARDS TRIGGERED.

Components of the project which would trigger environmental and social safeguards polices are community public works activities (under Livelihoods Restoration Component) and rehabilitation and

reconstruction of public infrastructure – roads, s bridges, railways, schools, health centres among others. Initial appraisal of the project highlights that the project activities would trigger three environment safeguards policies, and these are: (i) Environmental Assessment (OP 4:01), Pest Management (OP 4:09), Natural Habitats (OP 4:04),. Initial evaluation of scope of activities and potential scale of impacts have rated moderate and assigned the environmental category B. This category requires partial assessment of impacts, and line with safeguard requirements, an Environmental and Social Management Framework (including Pesticide Management Plan**)** will be prepared to provide guidance on mainstreaming environmental considerations in the project activities

3.0 COUNTRY CONTEXT

Malawi has an estimated population of 16 million people against land size of about 9.4 million hectares, and a population density is 139 persons per square kilometre. However, the southern half of the country has an average population density of about 350 persons per square kilometre, highlighting high population pressure within the country. About 84% of the population live in rural areas and depend on small holder farming while only 15% of the population live in towns. Agriculture is the single most important sector of the Malawi economy, contributing about 36% of value-added to GDP, employing 85% of the workforce, and contributing 90% of foreign exchange earnings in 2003. Total cultivated area in the past five years have been on average about 2.7 million hectares, of which 1 million hectares is held in some 30,000 estates with average farm size ranging between 10-500 hectares and the remainder (1.7 million ha) is under smallholder cultivation of average farm sizes of about 1 ha. Land pressures (and correspondingly extreme poverty) are most severe in Southern Malawi where average farm sizes are as low as 0.1 ha and much less in the Northern and Central regions of the country, where average farm sizes are 1.0-1.5 ha .

Malawi is endowed with diverse natural resources, which include some fertile soils, forest and water resources which accommodate diverse species of flora, fauna and fish resources. However these resources are currently challenged by complex interaction of several factors which include the rapid rate of population growth of about 2.8% per annum. This imposes ever intensive pressure on the natural resources utilization, leading to unsustainable land use, depletion of forest resources, and loss of biodiversity, heavy soil erosion and water pollution.

4.0 POLICY AND LEGAL REQUIREMENTS ON ENVIRONMENTAL ASSESSMENTS.

4.1 Malawi's Environmental Policy and Law.

National Environmental Policy (2004) provides broad policy framework on environmental planning in development programmes including undertaking environmental impact assessments for prescribed projects. The overall goal of National Environmental Policy is the promotion of sustainable social and economic development through the sound management of the environment in Malawi. The policy seeks to meet the following goals: secure for all persons resident in Malawi now and in the future, an environment suitable for their health and well-being; promote efficient utilization and management of the country's natural resources and encourage, where appropriate, long-term self-sufficiency in food, fuel wood and other energy requirements; facilitate the restoration, maintenance and enhancement of the ecosystems and ecological processes essential for the functioning of the biosphere and prudent use of renewable resources.

Environment Management Act (EMA), provides the legal framework for environmental planning including the preparation of environmental impact assessments for prescribed projects. The Environmental Management Act is administered by the Director for Environment Affairs in the Environmental Affairs Department of the Ministry of Natural Resources, Energy and Mining. The law covers specific responsibilities and duties for various public authorities in the environmental planning and management. Guidelines for Environmental Impact Assessment (EIA) in Malawi gazetted in 1997 facilitate the procedures, steps in mainstreaming environmental planning and management in all development programmes. The guidelines outline specific roles for institutions in managing environmental impact assessment, the mechanisms for integrating in project planning ; provide a list of prescribed projects that *require* an EIA (List A on pages 25 to 29) and a list of projects that *may require* an EIA (List B on pages 30-31) in all sectors.

4.2 World Bank Environmental Safeguards : OP 4.:01 (Environmental Assessment)

The objective of OP 4.01 is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence. Three categories of prescribed projects for environmental assessment are stipulated. Category A of covers large scale projects such as dams while category B covers medium scale projects and category C covers minor projects. Malawi Floods Emergency Recovery Project fall under category B of prescribed projects for environmental impact assessment. This is because the project will not fund large scale new infrastructure development projects(e.g dams, of power stations) but small to medium size rural infrastructural rehabilitation and reconstruction works in localized sites across the country (spread in about 15 flood affected districts)

The justification for classification of category B is that most of the project will focus on medium size rehabilitation and re-construction projects for sections of roads, bridges, canals and head works of irrigation schemes, repair of schools and health centres. The anticipated scale of potential adverse environmental or social impacts on human populations be site-specific, few if any of them are irreversible, and in most cases mitigation measures could be designed to address the impacts. An environmental and social management plans and abbreviated resettlement action plans for sub-projects can be used to addressee the impacts.

5.0 TERMS OF REFERENCE FOR THE STUDY

5.1 Specific features of this assignment

The proposed Malawi Floods Emergency Recovery Project will be coordinated by a Project Management Unit in Ministry of Agriculture, Irrigation and Water Development. Implementers will include various government agencies including district councils across the country. However, at this stage, the specific sites/locations and specific interventions have not been identified.

In view of these circumstances, and for practicality purposes, the appropriate environmental safeguard instrument for this project would be an Environmental and Social Management Framework (ESMF) instead of a conventional environmental impact assessment approach. An Environmental Impact Assessment (EIA) Report normally details effects and mitigation measures within defined locations/sites a project. On the other hand, an Environmental and Social Management Framework (also known as Strategic Environmental Assessment) is a statement of the policies, principles, institutional arrangements and procedures that would be followed in each sub-project of a multiple scale project or programme. An ESMF sets out the elements that will be common to all the subprojects. In this regard, an ESMF provides generic environmental management principles and processes to be followed in each of the subprojects, so that these need not be prepared individually for every subproject of the broader programme. The Environmental and Social Management Framework allows project implementers, who will be in many locations of undertake specific subprojects on basis of updated generic Environmental and Social Management Plans without having to re-negotiate fundamental agreements.

5.2 Objectives of the Environmental and Social Management Framework

The main objectives of ESMF are to:

(1) To undertake screening of potential impacts of Malawi Floods Emergency Recovery Project and to prepare generic Environmental and Social Management Plans for the direct impacts and indirect impacts, as well as incremental impacts from rehabilitation and re-construction works for infrastructure and irrigation schemes/water supply schemes.

(2) To formulate an Environmental and Social Framework Management (ESMF) standards and procedures, specifying how unidentified subprojects whose location are unknown will systematically address environmental and social issues in the screening for environmental and social impacts and categorization, site selection criteria, mitigation measures, design, implementation and operational phases as well as maintenance of the subproject lifecycle.

(3) To formulate Environmental and Social Rules for construction contractors. The rules shall be recommended for incorporation in construction contractor's bids and contract documents.

6.0 GENERAL SCOPE OF THE WORK.

The Malawi Floods Emergency Recovery Project falls within category B project requiring an environment assessment in accordance with the Bank's Operational Policy (OP 4.01). Additional Bank environmental safeguard policies to be evaluated for possible implications include Physical Cultural Properties (OP 4.11), Natural Habitats (OP 4.04) and Forests (OP 4.36). The Consultant should carefully review any possible triggering issues, and clearly describe if there is a potential to trigger these policies.

In the process of carrying out environmental assessment studies, the consultant should also make due consideration of relevant Malawi Environmental policies, laws, guidelines, procedures and standards for implementation of public sector projects in this category.

The scope of work to prepare the study would involve: (i) baseline studies, through desk review of relevant documents available in the country and field studies; (ii) assessment and determination of impacts (to include impact identification, prediction, evaluation and interpretation); (iii) development of an template ESMP for direct project impacts, including mitigation measures, capacity and awareness building requirements to mitigate those measures, and monitoring.

In addition, the ESMF should outline standards and procedures including checklists showing how unidentified future subprojects whose location are unknown will systematically address environmental and social issues in the screening for environmental and social impacts and categorization, site location criteria, mitigation measures, and implementation

7.0 MAIN AREAS OF FOCUS OF THE STUDY.

7.1 Description of background and scope of the project.

The consultant(s) shall provide the pertinent background in the conduct of the environmental and social management framework. They should briefly describe in a logical order the major components of the proposed project, a statement of the need for it and the objectives it is intended to meet. Also describe a brief design of the project, (including alternatives considered), the implementing agency, its location, preparation of layout plans, provision of basic service infrastructure (roads, boreholes, water) number and type of personnel to be employed, total project cost, off-site investments, operation and maintenance activities, its current status and timetable, and the identities of any associated projects. Describe other projects in progress or planned within the project intervention zones, which may compete for the same resources. In the background also state the purpose of the study and the target population.

7.2 Policy, Legislative and administrative Framework

Describe all the pertinent policies, laws and necessary licenses and approvals to be obtained for the proposed project to ensure that the implementation of the subprojects are line with sound environmental management practices and are in compliance with relevant pieces of legislation. Description should include those governing water resources, forests resources, health, protection of sensitive areas including forest reserves and game reserves, land use control. Also describe in general terms an institutional setup which supports the regulatory framework.

7.3 Environmental Baseline Information.

The consultant shall review and assess any existing environmental database for the country, and collect additional data as necessary from any possible source but should include field visits and baseline studies, with the objective to determine the state of the environment in Malawi. The consultant shall summarize country's environmental setting broadly as follows:

Population distribution including growth, size, density and implications.

Land resources: such as soils, topography, land tenure types and distribution in the country, commercial estates and smallholder farming in the country;
***Water resources*:** such as water quantity and quality with respect to surface waters and ground water.
***Biological resources*:** flora and fauna; including parks or protected forest reserves, main challenges in management of wildlife and forest resources

7.4 Screening of the Potential Environmental and Social Impacts of sub-projects

Potential impacts to be screened to include:

Rehabilitation and re–construction of roads and bridges: Loss of vegetation, soil erosion, compaction of land; construction spoils; dust emissions, solid and liquid waste disposal; sanitary conditions and health risks associated with migrant labour; local alteration in topography; disruption of important communal pathways , water resources degradation, disturbance or loss of archaeological/ paleontological and other heritage sites, noise nuisance from construction contractors

Rehabilitation and re-construction of irrigation schemes: Loss of vegetation, soil erosion, compaction of land; construction spoils; dust emissions, solid and liquid waste disposal; sanitary conditions and health risks associated with migrant labour; local alteration in topography; disruption of important communal pathways , water resources degradation, disturbance or loss of archaeological/ paleontological and other heritage sites, noise nuisance from construction contractors .

Rehabilitation and re-construction of schools, health facilities : loss of forest land; dust emissions, soil erosion, noise nuisance from contractors, rubble and solid wastes, damage on historic and cultural sites; effects on water resources within chosen sites; alternative future land use and possible land use conflicts.

7.5 Analysis of Alternatives to the Proposed Project

Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives which would achieve the same objectives. Compare alternatives in terms of potential environmental and social impacts; institutional and training, and monitoring requirements. Include the alternative of not implementing the project in order to demonstrate environmental conditions without it.

7.6 Development of Generic Environmental and Social Management Plan to Mitigate

The Consultant shall prepare and recommend feasible and cost-effective measures to prevent or reduce significant negative impacts. Estimate the impacts and costs of those measures, and of the institutional and training requirements to implement them. Prepare a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements and other necessary support services to implement the mitigating measures

For sub-projects, whose locations are unknown, the consultants will (i) develop a checklist and recommend typical impact assessment methodologies, to be annexed to the report, of typical impacts and mitigation measures. The consultants shall also describe institutional arrangements, including roles and responsibilities of different parties involved for screening, review, approval, implementation and monitoring of sub-projects envisioned under the project.

7.7 Development of an Environmental Monitoring Plan.

The consultants shall prepare a detailed plan, with relevant and measurable indicators to monitor the implementation of mitigating measures and the impacts of the project during construction and operation. Include in the plan an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to carry it out.

7.8 Development of Environmental and Social Rules for construction contractors.

The Consultant shall prepare environmental and social rules for construction contractors .These rules shall be attached to ESMF as an annex. The rules shall be recommended for incorporation in contractors bids and contracts for civil works

8.0. Suggested Outline Of The ESMF for Malawi Floods Emergency Recovery Project.

Executive Summary
Introduction
Description of the Proposed Project
Policy and Legal Framework on environmental assessment in Malawi
Review of World Bank Safeguards and implications
Description of the Environmental Setting
Significant Environmental Impacts
Analysis of Alternatives
Screening criteria and forms
Environmental and Social Management Plan
Capacity Building and Training for Environmental Management
References

Annexes
Environmental and Social Screening Form
Environmental and Social Rules for construction contractors
Checklist of environmental and social impacts from rehabilitation and re-construction works

Annex 2: Summary of implications of the project on various World Bank's Safeguard Policies

List of safeguard Policies	Focus of the safeguard policy	Explanatory Notes
Environmental Assessment OP/BP 4.01	The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and transboundary and global environment concerns.	An ESMF will be prepared which will provide the criteria and procedures for screening sub-project investments and guide the preparation of site-specific environmental and social management plans. The ESMF will also assess the institutional capacity of the implementing agency and provide measures for capacity building along with an estimate of the budget needed for the implementation of the ESMF. The ESMF will also provide a list of activities that could be financed by the Project and screen out activities that correspond to Category A projects.
Natural Habitats OP/BP 4.04	This policy recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species.	Because of the sensitivity of the Lower Shire area (being within the proximity of natural reserves and flood prone areas), it is possible that the ecological balance of the area could be affected, including natural reserves. Restoration of some livelihood activities, such as bee keeping and nature-based enterprises, may affect some protected wildlife reserves in rural communities. Rehabilitation of services and access to roads in flooded-affected wildlife reserves may affect conditions, including natural habitats - e.g. in Mwabvi Game Reserve/Lengwe National Park.
Forests OP/BP 4.36	The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank assists borrowers with the establishment of environmentally appropriate, socially beneficial and economically viable forest plantations to help meet growing demands for forest goods and services.	N/A
Pest Management OP 4.09	The objective of this policy is to (i) promote the use of biological or environmental control and reduce reliance on synthetic chemical pesticides; and (ii) strengthen the capacity of the country's regulatory framework and institutions to promote and support safe, effective and environmentally sound pest management. More specifically, the policy aims to (a) Ascertain that pest management activities in Bank-financed operations are based on integrated approaches and seek to reduce reliance on synthetic chemical pesticides (Integrated Pest Management (IPM) in agricultural projects and Integrated Vector Management (IVM) in public health projects. (b) Ensure that health and environmental hazards associated with pest man-	The project will support the rehabilitation of irrigation schemes. This involves investments in the agriculture sector that will enhance production and will likely increase the use of pesticides. However, the Project will not finance the procurement of pesticides. In cases where pesticides are used within existing production systems, the Project will promote the use of integrated pest management and the safe use, storage, and disposal of agro-chemicals. Irrigation schemes may use pesticides to control

	agement, especially the use of pesticides are minimized and can be properly managed by the user. (c) As necessary, support policy reform and institutional capacity development to (i) enhance implementation of IPM-based pest management and (ii) regulate and monitor the distribution and use of pesticides.	pests on schemes. An Integrated Pest Management Plan (IPMP) will be prepared to provide guidance on the use of proper use of pesticides.
Physical Cultural Resources OP/BP 4.11	The objective of this policy is to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. For purposes of this policy, "physical cultural resources" are defined as movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater. The cultural interest may be at the local, provincial or national level, or within the international community.	Some sub-projects may trigger this policy if contractors during rehabilitation and reconstruction of public infrastructure discover archeological sites, historical sites, remains and objects, including graveyards and/or individual graves. The Government of Malawi will prepare Chance Find Procedures for Contractors to guide them in the proper management of physical cultural properties in case they are found.
Indigenous Peoples OP/BP 4.10	The objective of this policy is to (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that adverse effects during the development process are avoided, or if not feasible, ensure that these are minimized, mitigated or compensated; and (iii) ensure that indigenous peoples receive culturally appropriate and gender and inter-generationally inclusive social and economic benefits.	N/A
Involuntary Resettlement OP/BP 4.12	The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.	Rehabilitation and construction of roads, bridges, health facilities and schools and irrigation schemes may require land for temporary or permanent use. The land acquired for this purpose may lead to loss of assets for some households. Potential risks are: loss of access to land/assets and loss of income sources or means of livelihoods whether or not affected people must move to another location. A RPF has been prepared to guide procedures on all sub-projects in incidences of land acquisitions, in cases of negative social impacts to people such as losses of assets, loss of income sources, loss of access to assets and income sources.
Safety of Dams OP/BP 4.37	The objectives of this policy are as follows: For new dams, to ensure that experienced and competent professionals design and supervise construction; the borrower adopts and implements dam safety measures for the dam and associated works. For existing dams, to ensure that any dam that can influence the performance of the project is identified, a dam safety assessment is carried out, and necessary additional dam safety measures and remedial work are implemented.	N/A
Projects on International Waterways OP/BP 7.50	The objective of this policy is to ensure that Bank-financed projects affecting international waterways would not affect: (i) relations between the Bank and its borrowers and between states (whether members of the Bank or not); and (ii) the efficient utilization and protection of international waterways. The policy applies to the following types of projects: (a) Hydroelectric, , flood control, navigation, drainage, water and sewerage, industrial and similar projects that involve the use or potential pollution of international waterways; and (b) Detailed design and engineering studies of projects under (a) above, include those carried out by the Bank as executing agency or in any other capacity.	The proposed Malawi Floods Emergency Recovery Project will finance activities outlined in Flood Risks Management Plan for Shire River Basin Management Programme. The project will finance river training activities on Ruo River, one of main tributaries of Shire River – internal water ways

Projects in Disputed Areas OP/BP 7.60	The objective of this policy is to ensure that projects in disputed areas are dealt with at the earliest possible stage: (a) so as not to affect relations between the Bank and its member countries; (b) so as not to affect relations between the borrower and neighboring countries; and (c) so as not to prejudice the position of either the Bank or the countries concerned.	N/A

Annex 3: Basic Environmental and Resettlement Screening Form for Sub-projects.

ENVIRONMENTAL AND SOCIAL SCREENING FORM FOR THE SCREENING OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS OF SUB- PROJECTS.

INTRODUCTION

This Environmental and Social Screening Form (ESSF) has been designed to assist in the evaluation of planned construction and rehabilitation activities under Malawi Floods Emergency Recovery Project. The form will assist the sub-project implementers and reviewers to identify environmental and social impacts and their mitigation measures, if any. It will also assist in the determination of requirements for further environmental work (such as environmental and social management plan) if necessary.

The form helps to determine the characteristics of the prevailing local bio-physical and social environment with the aim of assessing the potential impacts of the construction and rehabilitation activities on the environment by the sub-project.

The ESSF will also assist in identifying potential socio-economic impacts that will require mitigation measures and/or resettlement and compensation.

GUIDELINES FOR SCREENING

The evaluator should undertake the assignment after:
1. Gaining adequate knowledge of baseline information of the area.
2. Gaining knowledge of proposed project activities for the area.
3. Having been briefed / trained in environmental and social screening.

The form is to be completed by consensus of at least three people, knowledgeable of the screening process.

Government of Republic of Malawi

Ministry of Agriculture, irrigation and Water Development

Malawi Floods Emergency Recovery Project

Environmental & Social Screening Form

Guidelines: Site inspection of project site. The evaluation results to be a consensus of at least three officials.

Project Name: Thabwa – Muona Road	District.: Chikwawa
Project Location: Thabwa, Road	Nature/Size: 60 km
Name & Signature of Evaluator:	Date of Field Evaluation: 20/06/2015

		Appraisal	Significance	*Potential Mitigation Measures*
		Yes/No	Low, medium, high	
1.0	**Environmental Screening (OP 4:01)**			
	Will the project generate the following impacts			
1.1	Loss of trees			
1.2	Soil erosion/siltation in the area			
1.3	Pollution to land-diesel ,oils			
1.4	Dust emissions			
1.5	Solid and liquid wastes			
1.5	Spread of HIV/AIDS and other STI			
1.6	Borrow pits and pools of stagnant water			
1.7	Rubble/heaps of excavated soils			
1.8	Invasive tree species			
1.9	Long term depletion of water			
1.11	Reduced flow of water			
1.12	Nuisance from noise or smell			
1.13	Loss of soil fertility			
1.14	Incidence of flooding			
4.0	**Resettlement Screening (OP 4:12)**			
	Will the project generate the following negative social and economic impacts?			
4.1	Loss of land to households			
4.2	Loss of properties –houses, structures			
4.3	Loss trees, fruit trees by households			
4.4	Loss of crops by people			
4.5	Loss of access to river/forests/grazing area			
4.6	Impact cultural site, graveyard land			
4.7	Conflicts over use of local water resources			
4.8	Disruption of important pathways, roads			
4.9	Loss communal facilities –churches			
4.10	Loss of livelihood system			
4.11	Spread of HIV/AIDS			
4.12	Blockages to footpath/roads			

Overall evaluation of Screening Exercises.

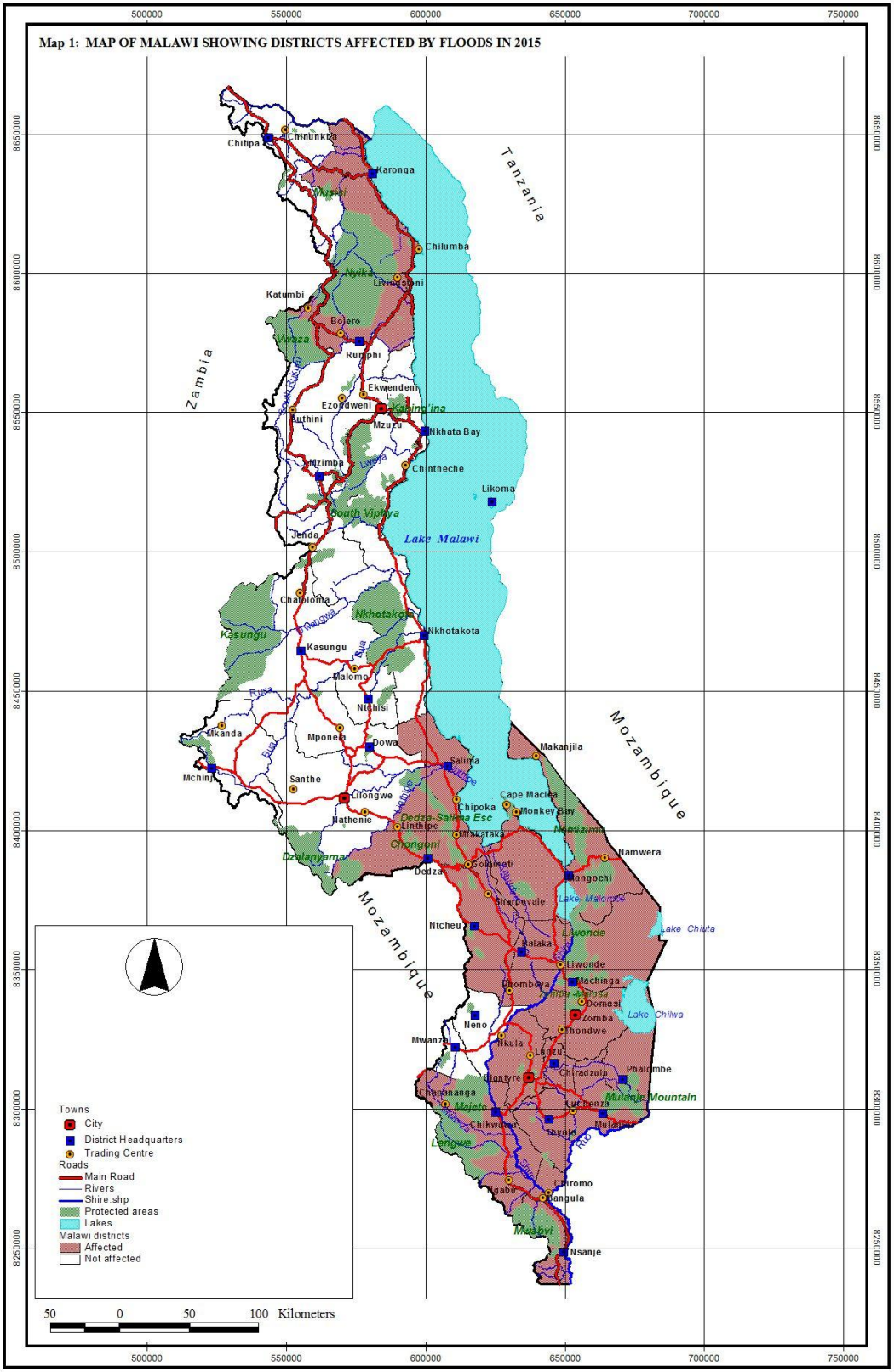
The results of the screening process would be either the proposed sub - projects would be exempted or subjected to further environmental and resettlement assessments. The basis of these options is listed in the table below:

Review of Environmental Screening (OP 4.01, OP 4.09, OP 4.36)	**Tick**	**Review of Resettlement Screening (OP 4.12)**	**Tick**
1. The project is cleared. No serious impacts. *(When all scores are "No" in form)*		1.The project is cleared. No serious social impact. *(Where scores are all "No", "few" in form)*	
2.There is need for further assessment. *(when some score are "Yes, High" in form)*		2.There is need for resettlement/compensation. *(When some score are "Yes, High" in form*	
Endorsement by Environmental District Officer		**Endorsement by Director of Planning and Development**	
Name		Name:	
Signature: Date		Signature: Date:	

NOTES:

1. The DPD shall ensure that a completed form is filed within project file immediately after endorsement. EDO may keep a duplicate.
2. Project Management Committee will maintain a copy of completed form
3. It is the duty of Director of Planning and Development and Environmental District Officer to ensure mitigation measures outlined in form are implemented.
4. An EDO shall prepare a monthly monitoring report on implementation of mitigation measures.

Annex 4: Map of Malawi showing districts affected by floods in 2015



Annex 5: Sample Chance Find Procedures

Chance finds procedures will be an integral part of the project ESMP and civil works contracts. If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:	
Step 1	o Stop the construction activities in the area of the chance find;
Step 2	o Delineate the discovered site or area;
Step 3	o Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Department of Antiquities take over;
Step 4	o Notify the supervisory Project Environmental Officer and Project Engineer who in turn will notify the Director of Antiquities in the Department of Antiquities immediately (within 24 hours or less);
Step 5	o Responsible local authorities and the Department of Antiquities would then be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the Department of Antiquities. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, namely the aesthetic, historic, scientific or research, social and economic values.
Step 6	o Decisions on how to handle the finding shall be taken by the Director of Antiquities. This could include changes in the layout (such as when finding irremovable remains of cultural or archeological importance) conservation, preservation, restoration and salvage.
Step 7	o Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities.
Step 8	o -Construction work may resume only after permission is given by Director of Antiquities concerning safeguard of the heritage

Annex 6: Generic Environmental and Social Checklist List

The Environmental and Social Checklist below serves as a sample checklist which will be adapted to the particular type and circumstance of the sub-project as well as the relevant local level (Village, District) at which the sub-project is planned. The checklist will be completed members of District Environmental Sub-Committee.

General Environmental and Social Checklist for minor rehabilitation and reconstruction sub-projects (schools, health centres irrigation schemes)

Stage	Potential Negative Environmental and Social Impacts	Tick if relevant	Mitigation Measure	Tick if relevant	Responsible Person
Before construction					
	Loss of livelihoods, impact on assets, land acquisition		Prepare Resettlement Action Plan as per OP 4.12 – see RPF		
	Landslides and soil erosion on sloppy hillsides		Terracing; excavation to level; control of water flows		
	Destruction of vegetation during excavation; may cause loss of fauna		Construction contracts to include provisions for limiting vegetative removal, and for revegetation of the construction area after completion of works		
	Soil erosion, deposition of fine debri (sand, silts, clays) in downstream water courses during construction, particularly in the rainy season		Construction contracts will require revegetation as soon as possible; contractors to be limited regarding activities that can be carried out in the rainy season; contractors will be required to treat excavated areas below flood water levels as required under the design contract (use of stone gabions and mattresses, before the start of each rainy season		
	Traffic disruption		Deliver materials during off peak hours Provide slip lanes		
	Noise disturbance		Not likely to be a problem		
	Dust impacts		In extreme cases, particularly near clinics, contractors will be required to moisten the construction area to minimize dust		
	Pit formation from sand mine		Use sand from existing borrow pits; fill back pits		

During construction					
	Noise		Use of ear protectors		
	Soil erosion		Planting trees and grasses, landscaping works		
	Cément and dust pollution		Dust control by water or other means		
	Pressures on existing water sources		Liaise with local utilities to ensure adequate water supply		
	Soil and water pollution due to large number of labourers on the construction site and related wastes		Build latrines and ensure adequate waste water disposal; ensure safe storage of construction materials such as oils, paints		
	Increase in theft		Civic education of migrant workers		
	Increase in spread of HIV/AIDS and communicable diseases		Distribute condoms Civic education		
	Conflicts between migrant workers and host communities		Civic education to migrant workers. Sensitization of host communities		
After construction					
	Soil and water pollution due to remainder of construction wastes, tools, equipment, and temporary infrastructure		Contractors to clear construction site of temporary infrastructures and restore vegetation of the site		
	Increase on solid wastes		Construct pit latrines Provide refuse bins		
	Increase in liquid wastes		Provide latrines		
	Conflicts over use of water with downstream users		Maintain some water for flow and use in downstream of the river		
	Pollution of water with pesticides		Use of minimal amount of pesticides Use of safe pesticides		
	Multiplication of pests and diseases		Drain off stagnant water		
	Salinization of soils due to overuse of fertilisers		Application of lime to soils		
	Clinical wastes		Destroy wastes at incinerator		

This form has been signed by: _____
Chairperson of the VDC / CDC: _____
Chairperson of the Environment Sub-Committee: _____
Date:……..

Environmental Checklist for rehabilitation of road and bridges sub-projects

S/No.	Potential Negative Environmental and Social Impacts	Tick if Relevant	Possible Mitigation Measures	Tick if Relevant	Responsible Person
1.0	**Footpaths**				
1.0	Loss of livelihoods, impact on assets, land acquisition		Prepare Resettlement Action Plan as per OP 4.12 – see RPF		
1.1	Footpath blocking drainage for runoff water		Install culverts or bridges across natural and manmade drainage channels and keep cleared of debris		
1.2	Ponding on path providing breeding site for vectors of water borne disease		Construct path so that water drains away by rising above surrounding ground level and by sloping the surface of the path towards the sides; fill depressions with granular material		
1.3	Footpath becoming a water course during rains and causing erosion		Provide drainage ditches on both sides of the path and install small check dams to reduce velocity of water flow; direct water from ditch along side footpath into natural or manmade drainage channels as frequently as possible to minimize the volume of runoff water carried by the ditch; plant shrubs and trees on the uphill side of the ditch to slow water runoff; make raised footpaths		
2.0	**Earth roads**				
2.1	Erosion of lands downhill from road bed or in borrow areas		Plant grass along the edge of the road; construct during dry season		
2.2	Create dust to nearby houses during construction		Dust control by water or other means		
2.3	Increased sediments into streams, ponds and rivers due to erosion from road tops and sides		Prevention of erosion by re-vegetation, dry construction and physical stabilization		
2.4	Possible land acquisition, loss of livelihoods		Refer to RPF		
2.5	Creation of stagnant pools of water in left borrow pits		Rehabilitation of borrow pits sites		
2.6	Erosion of fields		Construction of soak		

	caused by water being drained		way pits		
3.0	**Bridges and culverts**				
3.1	Flooding and erosion caused by overflowing and blockage of openings		Ensure that openings are adequately sized to accommodate flows and organize regular clean out of openings		
3.2	Bridge deck failure causing accidents and injuries		Establish and implement a maintenance program and establish a source of funding to pay for repair works		

Annex 7: Environmental and Social Rules for Contractors

These Environmental and Social Rules for Contractors are prepared for all the contractors to be engaged rehabilitation and reconstruction activities of projects under Malawi Floods Emergency Recovery Project. The guidelines include provisions for proper management of construction sites, safe storage of construction materials and safe disposal of wastes.

1.0 General Considerations

a) The contractor shall, in all his activities ensure maximum protection of the environment and the socio-economic wellbeing of the people affected by the project, whether within or outside the physical boundaries of the project area.

b) Before any construction works begin, the contractor shall ensure that the relevant environmental and land acquisition certificates of authorization for the works have been obtained from the Director of Environmental Affairs and/or the Commissioner for Lands

c) In general, the contractor shall familiarize himself with the Environmental and Social Management Plans and Resettlement Action Plans. Specifically, the contractor shall make every effort to follow and implement the recommendations and mitigation measures of the ESMP to the satisfaction of client and all relevant agencies.

d) The contractor shall work in cooperation and in coordination with the Project Management Team and/or any other authority appointed to perform or to ensure that the social and environmental work is performed according to the provisions of the Environmental and Social Screening and environmental management plans for sub-projects.

e) The contractor shall always keep on site and make available to Environmental Inspectors or any authorized persons, copies of the ESMPs, RAPs and ARAPs for the monitoring and evaluation of environmental and social impacts and the level or progress of their mitigation.

2.0 Acquisition of Construction Materials

a) The contractor shall ensure that construction materials such as sand, quarry stone, soils or any other construction materials are acquired from approved suppliers and that the production of these materials by the suppliers or the contractor does not violate the environmental regulations or procedures on mining. Collection of sand by communities will be guided by local council's by-laws.

3.0 Movement and Transportation of Construction Materials

a) The movement and transportation of construction materials to and within the construction sites shall be done in a manner that generates minimum impacts on the environment and on the community, as required by the ESMPs and the RAPs or ARAPs.

4.0 Storage of Construction Materials and Equipment

Construction materials shall be stored in a manner to ensure that:

a) There is no obstruction of service roads, passages, driveways and footpaths;

b) Where it is unavoidable to obstruct any of the service paths, the contractor shall provide temporary or alternate by-passes without inconveniencing the flow of traffic or pedestrians;

c) There is no obstruction of drainage channels and natural water courses;
d) There is no contamination of surface water, ground water or the ground;
e) There is no access by public or unauthorized persons, to materials and equipment storage areas;
f) There is no access by staff, without protective clothing, to materials and equipment storage areas;
g) Access by public or unauthorized persons, to hazardous, corrosive or poisonous substances including asbestos lagging, sludge, chemicals, solvents, oils or their receptacles such as boxes, drums, sacks and bags is prohibited;
h) Access by staff, without the appropriate protective clothing, to hazardous, corrosive or poisonous substances including asbestos lagging, sludge, chemicals, solvents, oils or their receptacles such as boxes, drums, sacks and bags is prohibited.

5.0 Safe Disposal of Construction Waste

a) Construction waste includes but is not limited to combustion products, dust, metals, rubble, timber, water, waste water and oil. Hence construction waste constitutes solid, liquid and gaseous waste and smoke.

b) In performing his activities, the contractor shall use the best practical means for preventing emissions of noxious or offensive substances into the air, land and water. He shall make every effort to render any such emissions (if unavoidable) inoffensive and harmless to people and the environment.

c) The contractor shall, in particular, comply with the regulations for disposal of construction/demolition wastes, waste water, combustion products, dust, metals, rubble and timber. Wastewater treatment and discharge will conform to the applicable regulations by the relevant Local Authority and Ministry of Irrigation and Water Development.
d) Asbestos wastes, PCBs and other hazardous wastes shall be treated and disposed of in conformity with the national regulations and where applicable, with the supervision of qualified personnel.

6.0 Occupational Health and Safety of Workers.

a) The contractor shall provide all necessary protective clothing for workers exposed to hazardous and dangers work activities.
b) All workers shall be regularly sensitized on safety regulations on the site.
c) The contractor shall be guided by and shall adhere to the relevant national safety cardinal rules on the site.
d) The construction shall maintain on the site first aid kits for male and female workers.
e) Workers shall be provide with clean potable water on the site and safety cooking places
f) Workers shall be provide with wash rooms and ventilated pit latrines.

7.0 HIV/AIDS Work Place Policy and Training on HIV/AIDS for workers.

a) The contractor shall prepare and adopt an HIV/AIDS Work Place Policy for construction site.
b) The contractor shall arrange for HIV/AIDS training programmes for the construction crews to ensure their understanding of the relevant issues. These will be budgeted elements within Bill of quantities for a construction project.
c) Appropriate IEC materials shall be distributed to workers on the site.
d) Both male and female condoms shall be distributed to workers on the site.

Annex 8 Selected list of people consulted in preparation of the framework

Name	Position	Organization	Date
Mr P. Chiunguzeni	Principal Secretary & Commissioner for Disaster Management	Dept of Disaster Management Affairs	March 2015
Mr S. Maweru	Secretary for Irrigation and Water Development	Ministry of Agric, Irrigation and Water Development	March 2015
Mrs E. Maganga	Secretary for Agric, Irrigation and Water Development	Ministry of Agric, Irrigation and Water Development	March 2015
Mr A. Namaona	Director of Planning	Ministry of Agric, Irrigation and Water Development	March 2015
Mr J. Banda	Deputy Director	Dept of Economic Planning and Development	March 2015
Mr R Fatch	Principal Economist	Dept of Economic Planning and Development	March 2015
Mr J. Kalowekamo	Deputy Director	Department of Energy	March 2015
Mr P. Mamba	Director of Irrigation	Dept of Irrigation	March 2015
Mr A Mbozi	Chief Irrigation Engineer	Department of Irrigation	March 2015
Dr P. Mtende		Ministry of Health	March 2015
Mrs M Kabambe.	Chief Nutrition Officer	Ministry of Education	March 2015
Mr P.Simbani	Director of AIDS and Debt Management	Ministry of Finance, Economic Planning	March 2015
Mr S. Ligomeka	Secretary for Housing	Ministry of Lands, Housing and Urban Development	March 2015
Ms E. Bota	Regional Commissioner for Lands and Valuation	Ministry of Lands, Housing and Urban Development	March 2015
W. Chipeta	Project Manager	Shire River Basin Programme	March 2015
O. Durand	Senior Agriculturalist	World Bank	March 2015
P. Waalewign	Senior Water Resources Specialist	World Bank	March 2015
Ms Chikondi-Nsusa	Transport Specialist	World Bank	March 2015
Mr D. Kampani	National Project Coordinator	IRLAD Headquarters	March 2015
Mr C. Mphande	Project Engineer	IRLAD headquarters	March 2015
Mr F. Mphasa	Financial Management Specialist	IRLAD headquarters	March 2015
Mr T.Hiwa	Chief Executive	Roads Authority	March 2015
Mr S Sibande	Transport Economist	Roads Authority	March 2015
Mr C. Mtawali	Senior Engineer	Roads Authority	March 2015
Mr P. Chipeta	Director of Operations	LDF	March 2015
Mr F. Magwede	Controller for Railways	Ministry of Transport	March 2015
Mr K, Munthali	Chief Architect	Directorate of Buildings	March 2015
Mr H. Chiudzu	Director of Buildings	Directorate of Buildings	March 2015
Mr F. Zhuwawo	Director of Planning	Ministry of Local Government and Rural Development	March 2015
Mr F.Sakala	Chief Rural Development Officer	Ministry of Local Government and Rural Development	March 2015
Mr J. B. Phiri	Director of Planning	Ministry of Transport and Public Infrastructure	March 2015

List of people who attended consultative meeting held at Salima District Council on 31 st March 2015

Name	Designation	Organization	Phone
Mr M. Chimphepo	District Commissioner	Salima District Council	
Mr B. Kantema	Assistant Disaster Risks Management Officer	Salima District Council	0994200509
Mr B. Kamanga	Trade Officer	Salima District Council	0888377323
Mr C. Nyasa	District Fisheries	Salima District Council	0999941740
Mr A. Nkhata		Salima District Council	0888160863
Mr G. German	COOPI	Salima District Council	0999391013
Mr L. Chinoko	Environmental Health Officer	Salima District Council	0999365075
Mr B. Nangwale	District Social Welfare Officer	Salima District Council	0999042326
Mr L. Katunga	Assi DADO	Salima District Council	0882542320
Mr H. Makombola	Ass. DCDO	Salima District Council	0999247812
Mr M. Kaufulu	Assist Registrar	National Registration Bureau	0999304455
M M Mailosi		Salima District Council	0993453785
Mr N. Charambo	Environmental Inspectors	Salima District Council	0993608700
Mr S. Phiri	District Forestry Officer		099568 2222
Mr S. Chiphake	Director of Public Works	Salima District Council	0999350819
Ms C. Banda	Field Officer	Red cross Society	0881673098
Mr C. Kumikundi	District Education Manager	Salima District Manager	0999266431
Mr B. Mahara	District Lands Officer	Salima District Council	0995644267
Mr J. Varela	Director of Agric	Malawi Mangoes Ltd	
Mr I. Majamanda	Director of irrigation	Malawi Mangoes Ltd	0999962 274

List of people who attended consultative meeting held at Mangochi District Council on 1 April 2015

Mr BJ Mtayamanja	Director of Administration	Mangochi District Council	
Mr E. Kadzokoyo	Director of Planning	Mangochi District Council	0999313318
Mr C. Millimu	Coordinator	Disaster Relief and Reparation	0999459479
Mr Y. Chiwndo	District Tourism Officer	Mangochi District Council	0999223298
Mr M. Mphande	District Community Dev. Officer	Mangochi District Council	0999342930
Mr J. Chamveka	District Fisheries Officer	Mangochi District Council	0999231873
Ms C. Chabwera	Assist District Disaster Relief Management Officer	Mangochi District Council	0999797617
Ms J. Lipinga	Monitoring and Evaluation Officer	Mangochi District Council	0884128280
Ms M. Kanyama	OPC	Mangochi District Council	099917862
E. Makwinja	Acting Diocesan Coordinator	CADECOM	0999644125
Mr D. Mfunya	Assistant District Forestry Officer	Mangochi District Council	0881638546
Mr W. Kamwendo	Ass. Business Officer	Mangochi District Council	0888375968
Mr B. Chunga	Ass.Commun Dev Officer	Mangochi District Council	0888301940
Mrs T. Mankwadzi	Enviro .District Officer	Mangochi District Council	0999613417
Ms A. Hauya	Environmental Health Officer	Mangochi District Council	0999232304

List of people who attended consultative meeting held at Liwonde Township,Machinga 2 April 2015

Name	Position	Sector	Phone
Mrs R.K Chavula	District Commissioner	Machinga District Council	0884002578
Mr M. Chimbalanga	Director of Planning and Dev	Machinga District Council	0888765454
Mr Dominic Mwandira	Director of Administration	Machinga District Council	0888353788
Mr Yohane Maseko	Land Resources Officer	District Agric Office	0881302956
Joseph Chipekiwe	District Comm Dev Officer	Min of Comm Dev	0999030244
Micheal Kachika	District Labour Officer	Ministry of Labour	0999652888
Matthews Kalaya	District Environmental H .Officer	District Health Office	0888346122
Ezekiel Luhanga	Monitoring and Evaluation Offi	Machinga District Council	0888352129
Shepherd Jere	Assist District Disaster Officer	Machinga District Council	0881142387
Eliza Kasinga	Wash facilitator	District Water office	0888187647
Marvia Mkondiwa	Assistant Cooperative Officer	District Trade Office	0882989552
Paul Mahosha	District Forestry officer	District Forestry office	0999381294
John Gangata	Officer Incharge ESCOM	ESCOM	0888844392
Evansi Chisiano	District Information Officer	Dept of Information	0881799978
Macleaod Piringu	HIV/AIDS Coordinator	District Health Office	0888717650
Sandilonda Nkhunga	Assistant Planning Officer	Liwonde Town Council	0881799137
Bob K. Joshua	District Fisheries Officer	Dept of Fisheries	0888876892
Bertha Mijoya	District Social Welfare officer	District Social Welfare Off	0888142912
Mr M.Makanjira	Ward Councilor	Liwonde Town Council	0888908355
Steve Meja	DWDO	Machinga District Council	099304222

List of people who attended consultative meeting held at Chikwawa District Council on 7 April 2015

Mr A. Mdooko	District Commission-er	Chikwawa District Council	0999917342
K. Harawa	Director of Planning	Chikwawa District Council	0888697451
D. Magwira	District Agric Dev Officer	Chikwawa District Council	0999927480
K. Kamphambale	Chief Accountant	Chikwawa District Council	0888891040
E.E. Hane	Building Supervisor	Chikwawa District Council	0888550843
P.G.Dulani	Director of Public Works	Chikwawa District Council	0994091558
Mrs Mwenje	AEDC	Chikwawa District Council	0999640206

List of people who attended consultative meeting held at Phalombe District Council on 8 April 2015

Name	Designation	Organization	Phone
Mr. P. Kalilombe	District Commissioner	Phalombe District Council	0888312157
Mr I. Mkandawire	Director of Planning and Development	Phalombe District Council	0888342155
Mr F. Mphalo	Acting Enevironmen-tal District Officer	Phalombe District Council	0888899628
Mr D. Mataka	District Education Manager	Phalombe District Council	0881663592
Mr Z. J. Phiri	Environmental Health Officer	Phalombe District Council	0888736851
Mr D.Chbani	Assistant Disaster Risk Management Officer	Phalombe District Council	0999104056
Mr H. Mwavani	Chief Public Works Officer	Phalombe District Council	0888313840
Mr S. Mkata	Assistant District Community Devel-opment Officer	Phalombe District Council	0884227228
H. M Kafanikhale	District Env Health Officer	Phalombe District Council	
H.D Phiri	District Community Development Officer	Phalombe District Council	

Annex 9: List of Non –governmental organizations consulted

Name	Position	Name of NGO	Phone
Kelton Tembo	Field officer	Goal Malawi	0881919721
Benson Chidaomba	Coordinator	CADECOM	0999375166
Lewis Msiyadungu	Coordinator	CCJP	01420577
Richard Dikamdima	Enginneer	Presscane	0881701454
Laston Zungu	Project Officer	Total Land Care	0995468023
Joseph Chimabalu	DCEO		
Prestone Yohane	Project Leader	DAPP	0991554660
Tawachi Kaseghe	Project Officer	Eagles Relief	0888358263
Clara Banda	Project Officer	Malawi Red Cross	0881673098
Gift German	Project Officer	Coopi	0999391013
Bucker Bijl	Director	Agricane	0999960 481

Annex 10 : List of flood affected local people consulted in in Chikwawa District

No	NAME	GROUP/ COMMITTEE	POSITION	CELL #	SIGNATURE
1	YELENA JOSEPHY		MLIMI		
2	BINGSIER HADSAN		"		
3	SAMSON BANDSONI		"	0998880183 0881131298	S. Banda
4	ALIYEJE LAISOPI		"		A L
5	SINFORD CHILAMBULERE		"		
6	WINDFORD JAMES		"		
7	CHRISINA TENIFALA		"		
8	FOLEKI KAPHIRI		"		F. K
9	MELIDA CHILAMBULIRE		"		
10	ENELESI CHADRECK		"		E. Shadreck
11	MOSE LODZENI		"		MOSE
12	LIGHI SIONKENI		"		
13	GROUP KALIMA		"		Kalima
14	GROUP DZIWAZINA		"		
15	MFUMU MPAKENI		"		IMPAISENI
16	MFUMU MILOSI		"		
17	GROUP MPEKO		"		
18	MFUMU FELEMU II		"		Felem
19	MFUMU SANDRAM		"		
20	ORLAN INJANKHULA		VICE Chair		O. I
21	NKHULANZE		MLANGIZI		
22	FREKI CHELASI		MLIMI		
	ENIFA CHIPENGA		"		

Annex 11: List of farmers consulted at Mitawa Irrigation Scheme

1. Harold Mtalika
2. Mavuto Kamala
3. Gofrey Rodgers
4. Charles Soliyai
5. Jenet Gablon
6. Tamani Malunga
7. Jack Chpojola
8. Abitiress Mkonda
9. Ester Makonde
10. James Kamwanza
11. Christina Khosi
12. Dinesi Kosimasi
13. George Matwere
14. Weston Chewayini