



Republic of Uganda

**Ministry of Water and Environment**

**Water for Production Department**

**Irrigation Development and Climate Resilience Project  
(P163836)**

**Environmental and Social Management  
Framework (ESMF)**

**January 15, 2019**

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## ACRONYMS

ACB	Agricultural Chemicals Board
ACDP	Agricultural Cluster Development Project
AfDB	African Development Bank
ANPPCAN	African Network for Prevention and Protection against Child Abuse and Neglect
ASSP	Agricultural Sector Support Programme
EIA	Environment Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESIS	Environmental and Social Impact Statement
ESSF	Environmental and Social Screening Framework
CAO	Chief Administrative Officer
CBSV	Cassava Brown Streak Virus
CES	Crop Epidemics Section
CERIP	Contingency Emergency Response Implementation Plan
CESMP	Contractors Environmental and Social Management Plans
CGV	Chief Government Valuer
CFR	Central Forest Reserve
CMP	Catchment Management Plan
CPF	Country Partnership Framework
CSA	Climate Smart Agriculture
CWD	Coffee Wilt Disease
DAO	District Agricultural Officer
DCDO	District Community Development Officer
DEA	Directorate of Environmental Affairs
DEO	District Environment Officer
DfWP	Department of Water for Production
DPO	District Production Officer
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
ECAAT	East and Central Africa Agricultural Transformation Project
EF	Environmental Flow
EHS	Environment Health and Safety
FBMO	Farmer Based Management Organization
GRC	Grievance Redress Committee
IDCRP	Irrigation Development and Climate Resilience Project
MVP	Millennium Village Project
NaFIRRI	National Fisheries Resources Research Institute
NCCP	National Climate Change Policy
NDP II	National Development Plan II
FAO	Food and Agricultural Organization of the United Nations
FPO	Focal Point Officer
GAL	Government Analytical Laboratory
GBV	Gender Based Violence

GDP	Gross Domestic Product
GWFS	Gravity Water Flow Scheme
GO	Grievance Officer
GoU	Government of Uganda
GRM	Grievance Redress Mechanism
HDI	Human Development Index
IITA	International Institute for Tropical Agriculture
IDA	International Development Agency
IDCRP	Irrigation Development and Climate Resilience Project
IFC	International Financial Corporation
IFPRI	International Food Policy Research Institute
ILO	International Labor Organization
IWRM	Integrated Water Resources Management
KDLGSR	Kanungu District Local Government State of Environment Report
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MEF	Minimum Environmental Flow
MoFPED	Ministry of Finance, Planning and Economic Development
MoGLSD	Ministry of Gender, Labor and Social Development
MoLHUD	Ministry of Lands, Housing and Urban Development
MSDS	Material Safety Data Sheet
MWE	Ministry of Water and Environment
NaCRRI	National Crop Resources Research Institute
NARO	National Agricultural Research Organization
NaSSARI	National Semi-Arid Agricultural Research Institute
NBI	Nile Basin Initiative
NCCP	National Climate Change Policy
NDA	National Drug Authority
NDP	National Development Plan
NEMA	National Environment Management Authority
NEMP	National Environment Management Policy
NFA	National Forestry Authority
NGO	Non-Government Organization
NRM	Natural Resources Management
NWSC	National Water and Sewerage Corporation
OWC	Operation Wealth Creation
PAP	Project Affected Persons
PPCR	Pilot Program for Climate Resilience
PPEs	Personal Protective Equipment
PB	Project Brief
PCN	Project Concept Note
PDO	Project Development Objective
PFCU	Pesticides and Fertilizer Control Unit
PMA	Plan for Modernization of Agriculture
PPE	Personal Protective Equipment
PIC	Prior-Informed Consent
PIT	Project Implementation Team

PIU	Project Implementation Unit
PSO	Project Support Office
RAP	Resettlement Action Plan
RDS	Rural Development Strategy
RPF	Resettlement Policy Framework
RWSD	Rural Water Supply Department
SEA	Sexual Exploitation and Abuse
TB	Tuberculosis
UBOS	Uganda Bureau of Statistics
UNBS	Uganda National Bureau of Statistics
UNADA	Uganda National Agro-Dealers Association
UNEP	United Nations Environment Program
UNICEF	United Nations Children's Education Fund
UPHIA	Uganda Population Based HIV Based Impact Assessment
URA	Uganda Revenue Authority
URTI	Upper Respiratory Tract Infections
UWA	Uganda Wildlife Authority
UWASNET	Uganda Water and Sanitation NGO Network
UWCAS	Uganda Water Country Assistance Strategy
UWSS	Urban Water Supply and Sanitation
VCT	Voluntary Counselling and Treatment
WASH	Water, Sanitation and Hygiene
WB	World Bank
WBG	World Bank Group
WfAP	Water for Agricultural Production
WUA	Water Users' Associations
WMDP	Water Management and Development Project
WUC	Water User Committee



### BACKGROUND

The Uganda Irrigation Development and Climate Resilience Project (IDCRP) is designed to assist the GoU increase the area under irrigated agriculture. The project will contribute to improvement of farm incomes, rural livelihoods, food security and climate resilience, sustainable natural resources management and agricultural enterprise development. To support the country's development priorities as highlighted in the NDPII, the development objectives of the project will focus on increasing agricultural productivity and institutional capacity for irrigation service delivery in targeted areas of Uganda.

### PROPOSED PROJECT

The Project will support Irrigation and Drainage Service Development (Component 1), choosing irrigation models responding to local needs and opportunities. The Project has as core focus on the development of two new large-scale irrigation schemes (Kabuyanda and Matanda/Enengo, both in the Western Region) and develop a pipeline for future investments (Amagoro in the Eastern Region, and Nyimur in the Northern Region), still inexistent in Uganda, which allows for economies of scale at all levels, thus allowing to tackle one of the core issues that Ugandan's farmers are facing in terms of access to markets. However, this model, to be successful, requires strong institutions and clear accountability for O&M, which might represent a challenge in Uganda based on the experience with medium-scale irrigation schemes. In order to build on these lessons and contribute to the institutional development of the irrigation sector in the country, the Project will also support O&M of existing medium-scale irrigation schemes (to be identified). Finally, the Project will pilot support to small and micro-scale irrigation, building up on the more successful experience of farmer-led irrigation model in the country, with an eye to leveraging private financing. Irrigation services will be developed hand in hand with Support Services for Agricultural Production and Value Chain Development (Component 2), cognizant of the need to expand use of other production inputs (improved seeds, fertilizers, machineries) to increase yield, enhance diversification, and intensification; and of the opportunity of irrigation to become the anchor for the development of value chains and strong producer organizations. The Project will keep a focus on sustainability, through Institutional Strengthening and Implementation Support (Component 3).

#### **Component 1. Irrigation and Drainage Service Development (US\$170 million)**

Component 1 will construct new large-scale irrigation schemes, carry out activities for the Operational and Maintenance (O&M) of new and existing schemes, develop studies for future schemes, and implement integrated catchment management interventions. This component will be implemented by MWE, with the exception of a reforestation activity which will be implemented in collaboration with the National Forestry Authority (NFA).

*Sub-component 1.1: Infrastructure Development.* Activities will include: (i) dam construction and associated head works; (ii) construction of irrigation networks (pipes, canals, hydro-mechanical equipment); (iii) on-farm irrigation works and equipment; (iv) construction of drainage networks; (v) construction of access and scheme roads; (vi) construction of scheme offices, sanitation facilities, and weather stations; (vii) technical assistance for preparation of feasibility studies and detailed designs for irrigation schemes; (viii) technical assistance for monitoring and control of works; (ix) technical assistance for O&M of irrigation schemes (including WUAs); (x) technical assistance for environmental audits and implementation of the Environmental and Social Management Plan (ESMP).

*Sub-component 1.2: Integrated Catchment Management.* Activities will include: (i) technical assistance for the preparation of scheme-specific catchment management plans; and (ii) implementation of the interventions identified in the catchment management plans.

## **Component 2. Support services for agricultural production and value-chain development (US\$20 million)**

Component 2 will create and strengthen farmer groups<sup>1</sup> in marketing, finance, and organizational management; facilitate access to quality inputs and appropriate technologies and practices with the aim of improving production and productivity; and support value chain development and market (domestic and regional) linkages to increase the value of traded items for better economic gains. The component will take a value chain approach, focusing on key commodities such as coffee, bananas, horticultural (fruits and vegetables) crops, and forage. This component will be implemented by MAAIF.

- a. *Subcomponent 2.1: Farmer Organizational Capacity Enhancement and Support.* Activities will include technical assistance to create and strengthen farmer groups.
- b. *Sub-component 2.2: Production and Productivity Improvement.* Activities will include: (i) technical assistance to provide extension services, facilitate access to inputs, promote good agricultural practices, sustainable land management practices, and integrated pests and disease management; (ii) matching grants to facilitate access to inputs (seeds, fertilizers, agro-chemicals), equipment (machineries) and irrigation technology (farmer-led irrigation); and (iii) purchase of small goods.
- c. *Sub-component 2.3: Value Addition and Market linkages.* Activities will include: (i) technical assistance to support value chain actors in improved post-harvest handling, agro-processing, access to financing services, access to markets and market information; and (ii) matching grants to facilitate access to post-harvest handling and processing tools, equipment and machinery.

## **Component 3. Institutional Strengthening and Implementation Support (US\$10 million)**

Component 3 will provide project implementation support, studies and technical assistance for institutional strengthening of MWE and MAAIF. This component will be implemented by MWE. Activities will include:

- a. purchase of project implementation goods (ICT Equipment, vehicles);
- b. technical assistance to the Project Management Unit (PMU);
- c. travel costs; and
- d. technical assistance to MWE and MAAIF in irrigation regulations/guidelines and necessary supporting studies (e.g. irrigation water tariff) for implementing the National Irrigation Policy.

### **Project justification**

The justification for the project is premised on the following:

- a. ***Growing challenges of water scarcity:*** currently the agricultural production in Uganda is overly rain-fed which is presently threatened by climatic changes resulting in poor crop and livestock production and productivity and reduces livelihood revenues accruing from the agricultural sector implying, water demands for irrigated agriculture are expected to grow exponentially in the coming few years as climate change perpetuates unreliable rainfall patterns. Therefore, securing availability of water for agriculture will guarantee food security and the livelihood of the residents, including the most vulnerable groups and addresses the need of the very poor in society.
- b. ***Limited access to agricultural financing:*** farmers face a challenge of low quality of produce and have limited access to finance markets which has been prompted by inadequate agronomic practices including storage and processing of produce to the desired quality. It is therefore pertinent that Farmer Based Management Organizations (FBMOs) are established to ensure sustainable management of these systems.

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<sup>1</sup> Including Cooperatives, Associations, Rural Producer Organizations and Area-based Commodity Cooperative Enterprises.

- c. **Limited levels of optimal land utilization:** The country has relatively abundant land and water resources which are highly underutilized, yet irrigation development is still at a very low level. The estimated irrigation potential varies among the conclusions of different studies depending on the levels of economic rate of returns. To date only some 15,000 ha out of the 8.85 million ha of land cultivated is irrigated (less than 0.2%), the rest is rain-fed. At the same time, food security, food production and nutrition need for fast growing population in Uganda remain an important concern which makes ventures in agricultural irrigation as one of the potential options towards optimal usage of land in the country.
- d. **Need for integrated natural resources management:** The project seeks to adopt an integrated natural resource development in conjunction with development of human resources to achieve sustainable growth of food production as well as supply of produce to the export market. Irrigated agriculture will be the centerpiece of the project around which, all other natural resource development will evolve; and
- e. **Address food security issues:** The Project activities will also lend support to the Government's plans for food and nutritional security, sustainable agricultural productivity and natural resources, climate change challenges, and agribusiness development and marketing.

## THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK AND PROJECT CATEGORIZATION

### Purpose of ESMF

Overall, the purpose of the Environmental and Social Management Framework (ESMF) is to ensure that interventions under the Irrigation Development and Climate Resilience Project will be undertaken in a manner that avoids and/or minimizes environmental and social impacts as much as possible. **Except for Kabuyanda Irrigation Scheme**, specific project locations for both Components 1 and 2 which have Environmental and Social Safeguards implications have not been conclusively identified at this stage. Therefore, this ESMF provides a general impact identification and management framework to assist project implementers to screen the projects and institute measures to address adverse environmental and social impacts. ESMF describes the procedures to assess environmental and social risks, including their management during implementation.

### Preparation of ESMF

The ESMF has been prepared in accordance with applicable World Bank Environmental and Social Safeguard Policies and Uganda Environmental Impact Assessment Regulations and Guidelines, and involved data literature reviews; field reconnaissance studies, public consultations and discussions with relevant sector institutions, including project host districts, private sector, statutory agencies and local communities. It is important to note that, the ESMF has not taken into account future auxiliary facilities that are to be established as part of the project especially material extraction sites such as stone materials (stone aggregates, stone dust and hard core), borrow areas for murram, sand and clay needs whose exact details cannot be ascertained at the moment but will be subjected to independent environmental and social screening during project implementation. Such sites will also be subjected to independent environmental and social screening processes as well as appropriate environmental assessments. Above all, contractors should procure construction materials herein named (stone-aggregates, marram, clay, sand, etc) from sources which have been approved by NEMA.

The project will trigger the following World Bank Environmental and Social Safeguards policies:

- a. OP 4.01 Environmental Assessment because the infrastructures will be of large scale, hence, need for Environmental Impact Assessment. ESMF has been prepared to guide development of site-specific ESIA and ESMPs during implementation phase.
- b. OP 4.04 Natural Habitats: The project component of Irrigation Infrastructure Development will entail interaction with wetland areas, rivers, forests as such; the project is likely to have impacts on natural habitats hence, triggering this safeguards policy. In addition, even Component 2 has some activities that may happen in wetlands and/ forestry/SLM activities. Site specific impacts of project activities on Natural habitats shall be assessed as part of ESIA and ESMPs to be developed during the implementation phase
- c. OP 4.09 Pest Management: Under Component 1, it is noted that, amongst others, there will be promotion of climate SMART conservation farming and provision of basic input packages as well as seedling production and crop intensification which will likely entail use of pesticides (though in small quantities) and thus trigger this policy. A Pest Management Plan has been prepared as part of the ESMF and shall be customized to each individual need and use during preparation and implementation of site-specific ESMPs.
- d. OP 4.12 Involuntary Resettlement is triggered because the works will necessitate land take triggering compensation and resettlement of project affected persons (PAPs). An RPF has been prepared alongside the ESMF and individual RAPs shall be prepared as and when deemed necessary during project implementation.
- e. OP 4.11 Physical Cultural Resources: This safeguard is triggered because project components are likely to involve infrastructure developments with civil works and excavations which may occasion accidental discoveries of PCRs, whose management will be through a Chance Finds Procedure developed under this ESMF and refined during preparation of site specific ESIA during implementation;
- f. OP 4.37 Safety of dams is triggered by construction of large dams whose design and management plans should be reviewed by an independent panel of experts; and
- g. OP 7.50 Projects on international waters: This Policy is triggered because Nyimur extends to South Sudan, whereas the Kabuyanda one flows into R. Kagera which feeds into Rwanda, and the Amagoro one is shared with Kenya. Riparian notification shall be undertaken by Government.

#### **Safeguard Policies Triggered and Environmental Assessment Categorization of IDCRP Project**

a. Due to the multipurpose nature of the planned investments, the irrigation facilities are envisaged to include dams, some are envisaged to be more than 15 meters high which are categorized as large dams according to World Bank Safeguard Policy O.P.4.37 on Safety of dams, the dams will create storage to enhance the irrigation capacity of the schemes, support livestock watering and aquaculture.

The large dams will require specialized considerations according to O.P 4.37 that aims at assuring safety and quality in design and construction of dams, the safeguard policy requires that large or high hazard dams in a world Bank financed project with dam height (H)>15 m OR 10<H<15 m and Reservoir, Capacity>3 million m<sup>3</sup>, or Crest length>500m, or spillway capacity>2000m<sup>3</sup>/s. Dams under 10 m are treated as large dams if they are expected to become large dams during the operation of the facility (e.g. tailings dams). The policy also requires that the borrowers retain experienced/competent engineers for the design and construction supervision as well as an independent Panel of Experts to review the project concept, its design and construction as well as preparation and implementation of Dam Safety Plans and Emergency Response Plans for such a project.

## **POLICY AND LEGAL FRAMEWORK IN THE IMPLEMENTATION OF THE PROJECT**

Under the project the following policies are applicable:

- a. The National Environment Management Policy 1994 (NEMP);
- b. The National Development Plan 2015-2020;
- c. The Uganda Vision 2040;
- d. Agricultural Sector Strategy Plan 2015/16-2019/20;
- e. The 2003 National Agricultural Research Policy;
- f. Draft Uganda Organic Agriculture Policy, July 2009;
- g. Water Resources Policy, 1995;
- h. Plan for Modernization of Agriculture (PMA);
- i. The National Land Use Policy;
- j. The National Gender Policy, 1997;
- k. The National HIV/AIDS Policy, 2004;
- l. The National Irrigation Master Plan for Uganda (2010-2035); and
- m. The National Policy for the Conservation and Management of Wetland Resources, 1995

### **The Legal Framework**

The applicable legal instruments to the project include:

- a. Constitution of the Republic of Uganda, 1995
- b. The National Environment Act, Cap 153, 1995
- c. The Occupational Safety and Health Act, 2006
- d. Environmental Impacts Assessment Regulations, 1998
- e. National Environment (Noise Standards and Control Regulations), 2003
- f. National Environment (Waste Management) Regulations, 1999
- g. Land Act, Cap 227, 1998
- h. Water Act, 1995
- i. The Public Health Act, 1964
- j. The Workers Compensation Act, Cap 225, 2000

### **STAKEHOLDER AND PUBLIC CONSULTATIONS**

To ensure that key interests of the public, at various levels of governance are addressed and incorporated into the design and implementation of this project, stakeholder consultations were carried out as part of the ESMF and RPF preparation processes. The stakeholders and beneficiaries of the project were identified after undertaking literature review and consultations with the client. Consultative meetings were held during field visits with the key stakeholders and institutions which included: district local government officials, sub-county officials, local leaders and project target communities in all project districts. At districts Levels, consultative meetings were held with; the District Planners, the District Production Officers (DPO), the District Community Development Officers (DCDO), the District Agricultural Officers, the District Water Officers, the Natural Resource/Environment Officers and the Fisheries Officers. At the sub-counties, the Sub-county Chiefs and the Community Development Officers were consulted while at the community levels; local leaders especially the LC1 Chairmen, a representative number of the target communities and farmers were met. Based on the consultation findings, majority of the stakeholders indicated full support of the especially because of its anticipated benefits toward improvement of agriculture which is a major source of peoples' livelihood. The project will have a positive impact on improving social and public welfare and addressing environmental concerns primarily those related to access and improved water supply for both domestic and livestock use amongst others.

## MAIN ENVIRONMENTAL AND SOCIAL IMPACTS OF THE IDRCP

### Positive impacts

These will include:

- a. From **environmental sustainable perspective**, the project is to be implemented within watersheds depending on their levels of deforestation, status of environmental degradation, or degraded lands, and degree of bank erosion. This will be a big positive impact in that, land and the environment will be restored including their productivity;
- b. The plans to put in place **irrigation infrastructures will go a long way to addressing challenges of water availability** which is a growing limitation to agricultural production and productivity;
- c. Proposals to include **apiculture and aquaculture will all demonstrate the benefits of sustainable** use of natural resources for livelihoods of the communities and supply of much needed foods for healthy living of the communities;
- d. Investments in **irrigation facilities will improve water use efficiency** thereby guaranteeing agricultural production without necessarily waiting on rains as is traditionally practised;
- e. The project will **contribute to the development of national capacity towards early warning** and predictions through planned establishment of 4N<sup>o</sup>. of class B-climatic stations the irrigation schemes;
- f. By and large, the project is expected to have significant positive impact on social conditions by increasing productivity and production of food sources such as fisheries, honey and better crops yields through drop intensification drives which ensures food security at household levels as well as sources of incomes which translates to better livelihoods;
- g. Climate Smart Agriculture ensures sustained crop production without over-reliance on rain-fed agriculture giving assured sources of food and income for the participating farmers;
- h. The project will generate critical skills in highly demanded and specialized trainings in areas of crop production and animal husbandry including apiary which is a sustainable form of land use and a successful cottage enterprise;
- i. Enhancing technology of production along the entire commodity value chains, including providing farmers with access to technical knowledge and improved seeds and breeds;
- j. Access to market will provide much needed market information for better marketing of the produce giving farmers better prices and good earnings from their enterprises. The project will also **support formation of FBMOs/WUA** which will help to manage water infrastructures at grassroots thereby guaranteeing their sustainability;
- k. **Creation of employment opportunities** for the local workers to be recruited on the project especially amongst neighbouring communities;
- l. The project areas especially in Isingiro will support local livestock farmers through **provision of watering facilities for livestock** and this will go a long way to addressing water scarcity which is chronic in those areas;
- m. The project will have **indirect positive impact through sale of construction materials** such as murrum and through such, the locals can earn some additional incomes for their livelihoods and support their families;
- n. The **planned installation of sedimentation and erosion control structures** will address issues of land degradation in the project sites and their environs thereby ensuring sustainability of the land for production;
- o. The project initiatives to **establish crop improved and adapted varieties** of multi-purpose economic trees will achieve a double pronged benefit by addressing Greenhouse gas emissions as well as serve as food security in the communities;

- p. **Improved household acreages:** In most rural areas, crop production systems using rudimentary cottage labor and equipment have for long typified agricultural production in the proposed project areas which in a way has kept it plunged in food insecurity, limited production and productivity, limited household acreages summing to poor household incomes. The project is envisaged to assist farmers clear their lands alongside a host of farming husbandry support services which will bring about improved production at household levels.
- q. **Food security at household levels;** It is common in many parts of the country now to be food insecure and in view of these, the project envisages to bring productive use, some acreage of land into crop production through irrigation thereby addressing limitations caused by climate change challenges;
- r. There will be improved accessibility, trade and commercial opportunities **after the planned rehabilitation of community access roads** which will enhance commercial opportunities as well as delivery of social services in the beneficiary areas;
- s. **Gender empowerment:** aware of eminent gender disparities in the project areas, the project has measures aimed at empowering the women who are participating in the project through training and skilling on income generation, record keeping and savings which will be some stride towards women empowerment;
- t. **Crop diversification and intensification:** at the moment, the project areas mainly rely on a limited range of crops both food and cash crops as such, their income base is limited. The project plans to introduce irrigation technology which is adaptable to rural areas through which, other crops especially horticultural crops can be grown alongside traditional crops in the rural areas of the project. This diversification implies diverse sources of income at household and improved livelihoods as well;
- u. **Fuel saving stoves technologies** will address sustainable use of biomass energy thereby address rapid loss of vegetation augmented by unsustainable use of wood as source of energy;
- v. Planned construction of **investments in integrated river banks stabilization** will protect the rivers from siltation and sedimentation from run-off;
- w. **Improvement of access** in irrigation areas through rehabilitation and construction of farm access roads within the schemes which will help farmers transport their produce out of the fields; and
- x. **Development and transfer of technical skills to the beneficiary communities;** once in the communities, local who are keen will equally benefit from a number of on-job trainings hence building their technical capacities in working on such equipment.

### **Negative Impacts**

These have been discussed thematically as follows:

#### **Development of Multi-purpose Irrigation Facilities**

- a. **Envisaged involuntary resettlement:** to be triggered through potential land-take for construction of common infrastructure facilities such as farm roads, irrigation/water distribution channels and dams amongst others. These will be mitigated as detailed in the RPF;
- b. **Likely impacts on livelihoods:** implementation of project works will have a short-term negative impact on some of the farming activities through works on water channels and dam construction which in the end will impact on livelihoods. This will be a short-term negative impact and once works are completed, the functionalities of the facilities will be restored;
- c. **Concerns over inadequate consultation of various stakeholders:** this is likely to occur in some sections especially omitting vulnerable groups (like youth and women) and in the end, their input is missed in the planning of the interventions and bring about, intensification of existing gender

disparities. It is suggested that, subsequent Environmental Assessments will have in place, robust Stakeholders Engagement Plans to address such issues (SEP), and this being an EA Cat. A project, at least two stage Stakeholder Consultations and Disclosure shall be undertaken for every ESIA prepared;

- d. **Labor influx related social risks:** those related to influx of labor into project areas thereby breeding labor related issues, conflict between the workers and host communities, HIV/AIDS and child labor, child abuses and related child and sexual exploitation as well as instances of crime are all envisaged to arise alongside Gender Based violence. General provisions to address these risks are listed in this ESMF.
- e. **Potential conflict over water usage:** Being multi-purpose dams, there can be conflicts over their access and usage. Watering cattle, fish farming and water conveyance for irrigation needs if not well managed can trigger conflicts amongst the users. It is suggested that, the Water User Associations take charge of ensuring the facilities are operated and managed sustainably.
- f. **Potential reduction in downstream flows:** Uncontrolled abstraction of water for irrigation without due consideration of the river environment can likely lead to decrease in downstream flows of water with attendant environmental and social impacts which can be characterized by conflicts amongst communities. In the Feasibility Studies and ESIA's, Environmental Flow (EF) assessments for the project be conducted and established to guide on the amounts abstracted sustainably i.e. Minimum Environmental Flow (MEF) to guarantee maintenance of the essential river ecological, socio-economic and hydrological functions.
- g. **Sedimentation and siltation of the water courses:** Construction activities including clearance of vegetation, stream crossings, operation of large equipment and equipment lay down, will potentially lead to soil disturbance at the construction sites, resulting in soil erosion, degradation of water quality in the project areas and subsequent sedimentation of the river. This is gauged a low negative impact to be mitigated through restoration of the sites after works and undertaking works in accordance with Contractors Environmental and Social Management Plans (CESMPs).
- h. **Safety, Security risks, thefts, and possible vandalism on project facilities and installations:** Inadequate construction site safety measures and security poses a significant risk to lives and assets, theft of construction materials and property. Accidents, theft or vandalism of assets, materials and property would increase construction costs and cause delays in project completion. Improper safety and security measures may also pose a security risk for construction workers and particularly foreign staff on construction sites.
- i. **HIV/AIDS risks:** According to Uganda Population Based HIV Based Impact Assessment -UPHIA 2016/2017 report, HIV/AIDS prevalence based on regional dimension and in particular, Western Region (where Kabuyanda and Matanda/Enengo sites fall) posts a prevalence of 7.9% making it second highest after central region. No doubt, this means, there are risks to workers from the scourge and the project has to put in place measures to address it in terms of awareness and sensitization, distribution of condoms, conducting voluntary counseling and testing (VCT) amongst other interventions. It is important to reflect that, if labor issues are not well articulated in the project, it runs risks of sexual exploitation which can trigger risks of sexual infections.
- j. **Issues of child labour in rice irrigated fields:** The regional distribution of child labor in Uganda indicates that eastern region (where the proposed Amagoro site falls) has a relatively higher proportion of working children aged 5-9 years and reveals the highest number of working children compared to other regions. Child labor comes with it social vices of sexual exploitation and abuse especially of the girl child causing instances of early pregnancies. *WUA as well as the local leaders will be key in championing education of the farmers to see that, children are not engaged in the work in the fields thereby compromising the Universal Pupil Education (UPE) policy.*



- k. **Risks of disease incidences:** The project has also the potential to increase the risk of infections by creating additional habitat for the snail vector and increasing exposure of the population, especially children, to water. Inadequate drinking water, sanitation and hygiene (WASH) are important risk factors, especially in a low income setting like this project area. Incidences of these infections/diseases may be exacerbated by dam construction activities on the rivers and increased deposition of wastes in the water from human activities near the water bodies. *Sanitary facilities for the all workers shall be provided during the construction phase and that, during the operational phase, WUA should sensitize communities on the importance of improving water and sanitation to prevent the burden water borne diseases in the irrigation facilities.*
- l. **Risks of children drowning in dams:** There can be risks of children getting tempted to swim in the dams and some risk drowning while trying to swim and sometimes, fish in the dams. WUA will sensitize communities on the risks and dangers associated with dams waters.

#### **Construction of access roads**

The likely environmental and social impacts of roads rehabilitation are expected to be minor given the low mechanized road works that will be involved. The project will not support opening of new roads but rather, concentrate on improving existing access roads. The priorities for road investment at district level will be based on the size of agricultural production for respective commodities. Access road works will include re-shaping (slight earthworks), provisions for culverts and small bridges and limited lateritic lining to treat critical points as needed. Roads design could include drainage ditches where longitudinal slopes are accentuated.

#### **Construction of offices blocks**

These will include:

- a. **Potential loss of land to the office infrastructure** though this will be limited to just areas for the office blocks, and such lands will be provided by the local administration governments. The sites and, the areas where the office blocks are to be set up should not have trees or elaborate vegetation. In addition, works will be restricted to areas required for the infrastructure.
- b. **Occupational health and safety risks:** Provide adequate and appropriate Personal Protective Equipment (PPE) such as safety boots, helmets, gloves, overalls and this should be in keeping with the task and exposure a worker is subjected to and also, First Aid Kit must be kept on the site and modestly stocked with necessities for any emergencies.
- c. **Runoff and possible soil erosion:** The contractor will schedule for the cut to spoil materials to be transported and disposed at sites agreeable to the Engineer for the project as well as some of the cut to spoil materials to be used for back-filling the foundation works. There will be measures for rainwater harvesting as part of office blocks to be constructed.
- d. **Setting and operation of temporary workers' camps, equipment storage yards, etc:** The setting and the operations of the temporary camp sites and equipment storage yards will be necessary at the construction site. This will raise public health issues on poor human and domestic waste disposal, including safety concerns, both public and occupational. The site specific ESIA's will provide Camps and Equipment Storage Yards Management plans covering all safety and health aspects. The ESIA will require contractors to address sanitation issues through provision of mobile toilets and where possible construct pit latrines which will be demolished, and the places fully restored and later by fully landscaping the site. Other non-human waste will be collected and disposed of at designated collection areas in consultations with the areas DEOs, in line with Waste Management plans that shall be developed.

- e. **Generation of wastes during construction and operation phases:** The MWE and/or MAAIF shall ensure preparation of Waste Management Plans as part of the ESIA or ESMPs to be developed during project implementation. The ESIA and ESMPs, including Contractual Obligations, shall require all Contractors to provide for proper waste disposal on site and management of solid waste generated by the workforce. Construction materials and equipment will be confined to the site. Furthermore, during the operational phase, the office management will sort the waste, keep it in different garbage bins and deliver this sorted waste/debris to the dump sites gazetted by the districts in the areas of jurisdiction.
- f. **Production processes-based wastes:** The value addition processes will likely lead to generation of industrial waste whose details cannot be exhaustively outlined in this ESMF. It is proposed that, when details of such ventures are fully developed, separate and appropriate levels of ESIA will be conducted and such could assume forms of Project Briefs/ ESMPs amongst others.
- g. **Generation of crop-based wastes:** This intervention will generate a range of crop waste based on the crop being promoted which if not well managed will turn to be a public health risks to the communities. In most rice hullers there are huge heaps of rice husks which farmers try to dispose through burning which adds to carbon emissions generation;
- h. **Risks of food insecurity at household levels:** Commercialization of the commodity crops will have economic benefits at household and national levels and no doubt, increase income at household levels. However, this must be balanced in such a way that, households don't focus on industrial market at expense of household food security.
- i. **Environmental concerns from project-based commodities industries:** Once industrial ventures are started; the operations of such facilities will generate a host of environmental and social impacts which can compromise the investment objectives. It is recommended that; the developers of such ventures conduct appropriate ESIA to ensure sustainability of such enterprises and their operations under Standard Operational Procedures for such industries.
- j. **Potential instances of child abuse:** The project should not recruit children as workers on the project in contravention of the child labor laws and International Labor Organization (ILO) as well as IFC PS 2 regarding labor recruitment. All those looking for work but below 18 years will not be allowed into the project including possible emerging livelihood opportunities related or mean to serve the project (food preparation etc.).

## **INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS**

The following agencies will be responsible for delivery of the proposed project:

**Multi-sectoral Steering Committee:** A multi-sectoral Project Steering Committee (PSC) will be set up to provide high-level operational and policy guidance to ensure that the Project components and activities are implemented as intended. The PSC will be chaired by the Permanent Secretary of MWE and will comprise Permanent Secretaries (or their representatives at high technical level) of the Ministries of: Agriculture, Animal Industry and Fisheries (MAAIF); Gender, Labour and Social Development (MoGLSD); Finance, Planning and Economic Development (MoFPED), Trade, Industry and Cooperatives (MoTIC); Local Government (MoLG); and Executive Secretaries of Uganda National Farmers' Federation (UNFFE) and National Environment Management Authority (NEMA); as well as the Chief Administrators of the districts where the irrigation schemes are to be established. The PSC will meet quarterly to review work plans, budgets and progress of implementation, and ensure adherence to relevant Government policies and strategies during implementation of the Project.

The MWE is the Lead Project's implementing agency. The MAAIF will be a key implementing partner of the Project's activities that fall within MAAIF's mandate. As the Lead implementing agency for the Project,

MWE will be responsible for planning, procurement, budgeting, Financial Management (FM), Monitoring and Evaluation (M&E), and reporting, among others. The Permanent Secretary of the MWE will be the Accounting Officer for all Project's funds. MWE through its Water for Production Department will have overall responsibility for Components 1 and 3, while MAAIF through its Agricultural Investment and Enterprise Development Department will be responsible for Component 2. The existing decentralized management structures (Water for Production Regional Centers, Water Management Zones) and District Local Governments (DLGs) will support the central Departments in their efforts to deliver outputs in each of the Project areas. Similar implementation arrangements are used under the Farm Income Enhancement and Forestry Conservation Programme 2 (FIEFOC-2) Project, financed by the AfDB.

A Project Management Unit (PMU) will be constituted within the Water for Production Department of MWE and composed of MWE and MAAIF's focal points in charge of the oversee of selected activities, in addition to key hired technical specialists (procurement, accountant, environmental, social, and M&E specialists). The PMU will assist all Project implementation departments to carry out specialized tasks. The PMU will also be responsible for consolidating plans, developing budgets, monitoring results, compiling reports, and disseminating outputs and outcomes.

**Ministry of Agriculture, Animal industry and fisheries:** MAAIF will be a key implementing partner of the Project's activities that fall within their mandate especially the irrigation sub-component and Component 2 - Essential support services for agricultural production and value-chain development. **Ministry of Trade, Industry and Co-operatives:** MoTIC is responsible amongst others, for developing, coordinating, regulating, promoting and facilitating domestic and external trade with particular emphasis on value addition drives in the project as well as export promotion and access to regional and international markets for the commodities under this project.

**Ministry of Gender, Labor and Social Development:** Will be key with respect to the supervision of implementation of livelihood restoration programs as well as providing guidance in mitigation of risks of sexual exploitation and abuse, and employment of children. The Ministry will be key in aspects of HIV/AIDS mainstreaming, occupational health and safety as well as gender issues in the project. **National Environment Management Authority:** NEMA in the project will be to review and approve Environmental Assessments and Project Briefs as well as monitoring records submitted in accordance with the National Environment Act and its respective Regulations. **District implementation framework:** Each District will designate a Project Support Officer (PSO) among its staff, who will head the District Technical Support Team to support the implementation and technical supervision of the Project, including sensitization of farmers, training, and monitoring and evaluation in the respective local governments. At districts levels, the DEOs and CDOs are all key in the implementation of the project with respect to observance of environmental and social safeguards during project implementation. NFA will be involved in implementation of forest restoration activities designed as mitigation measures against impacts on Central Forest Reserve areas.

#### **INSTITUTIONAL ARRANGEMENT FOR SAFEGUARDS MANAGEMENT IN IDCRP**

As indicated above, the Department of Water for Production which is the Implementing Unit has within the Ministry establishment, 3N<sup>o</sup>. Regional Centers i.e. northern, eastern and western as well as an Environment Officer within the headquarters who are all responsible for oversight role on environmental and social safeguards issues in the Department's interventions. It important to note that, the key responsibility of the sociologists whose key role is mobilization of the communities and within these, the centers are stationed environmental and social safeguards whose primary role is mobilization and sensitization of the communities to participate in project interventions in their areas of jurisdiction.

In addition, within the Ministry and in particular, the Urban Water Supply and Sewerage Department has also two safeguards officers with whom, the Environment Officer in the Department of Water for Production works closely with on matters of safeguards mainstreaming and management in the two Departments. Furthermore, there are a number of sociologists on some of the projects in the Ministry who manage mainly, community mobilization and sensitization in the projects. In view of these, safeguards capacity in the Ministry is sufficient to ably handle environmental and social safeguards requirements in the projects. Besides the existing Capacity, the Project will hire Experienced Safeguards Specialists based at the PIU to undertake overall coordination and management of E&S aspects of the project.

On the other hand, NFA will assume responsibility over the compliance of their sub-component's activities focusing on reforestation. NFA has an Environmental Management Unit headed by an Environmental Officer who works closely with Social Management Specialist under the Directorate of Natural Forest Management through its Collaborative Management Unit. The two entities complement one another in aspects such as review of ESIA's, field monitoring and inspections of projects to track safeguards compliance under the Authority. However, the Environmental Management Unit recognizes the need for it to have a full-time social safeguards officer for ease of planning work and execution of environmental and social safeguards services without reliance on staff from other a sister department which has some limitations.

With respect to MAAIF, project component activities under its responsibility will be overseen through existing Environmental and Social Safeguards Management Unit established originally under ATAAS and has now taken over the safeguards aspects under the Agricultural Cluster Development Project (ACDP) under the Crop Resources Directorate. Though it is a project operated unit, for now it doubles as a main entity overseeing environmental and social safeguards issues in the Ministry. The Unit is staffed with an Environmental Specialist and a Social Scientist. From discussions, the Unit will oversee environmental and social safeguards issues in the IDCRP though it will require additional support in terms of transport and dedicated funds for its operations. At the moment the two officers are sharing one vehicle and their operations funds are clearly dedicated to the project safeguards aspects.

In all, the Environmental and Social Safeguards Units in the Ministries and NFA will undertake environmental and social screening of the subprojects, preparation of specific plans/instruments (ESMPs etc), review and approval of such instruments as well as supervision and monitoring safeguards including grievance redress mechanisms.

At the Districts levels, the DEOs and CDOs are well placed to oversee compliance of project works at project local levels which is consistent with their mandate as enshrined in the National Environment Act Cap 153<sup>2</sup>. The DEOs and CDOs will be conducting routine monitoring of the project as well as attending monthly site meetings. By mandate, the DEOs are required to prepare reports to NEMA on environmental aspects in the projects in their areas and activities of the project will constitute such reports. In particular, the CDOs, Probation Officers and Labor Officers become key with respect to ensuring the project does not allow children to be employed in the project. In addition, these officers are well placed to address employment issues in the project with a focus on issuance of contract to employees and payments of

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<sup>2</sup> Statute 15(2)f DEO is to gather and manage information on the environment and utilization of natural resources in the district.

employees. They will pay keen attention to instances of gender-based violence and marginalization of workers on gender dimension amongst others.

### **CAPACITY BUILDING AND TRAINING**

Despite there being adequate staff to handle environmental and social safeguards in the Department and in the IDCRP, there is need to augment that potential through tailor-made trainings and provision of equipment-based support in-terms of computers and transport. There is need to build the safeguards capacity in terms of:

- a. Provision of equipment and transport to facilitate supervision and monitoring of field projects;
- b. Work based support to enhance timely reporting;
- c. Technical enhancement through international field exposure, experience and tailor-made training to orientate the sociologists and environmentalists to have basics of environmental and social safeguards monitoring and reporting, irrigation institutional management and environmental management;
- d. Development and implementation ESIA's;
- e. Management and reporting on environmental and social aspects in projects;
- f. HIV/AIDS and gender mainstreaming in projects and reporting on such themes;
- g. Management of involuntary processes in projects;
- h. Employment and labor engagement processes;
- i. GRM issues in the projects and their resolution mechanisms; and
- j. Implementation of ESMPs.

### **ESMF Budget**

Financial resources are required to support implementation of this ESMF based on estimates summarized on the below though the cost estimates will be confirmed during project appraisal.

#### **Indicative ESMF Budget for IDCRP implementation**

<b>N°.</b>	<b>Item/Activity</b>	<b>Cost USD</b>
01.	Mobilization and sensitization of the communities and participating farmers especially in Nyimur Multi-purpose project.	55,000
02.	Training and training beneficiaries on safeguards under Component 2	35,000
03.	Mobilization and training in environmental and social safeguards requirements for Technical staff of Department of Water for Production in MWE.	15,000.00
04.	Building the capacity of Department to institutionalize safeguards management (specialized short-term trainings, transport 04No. Double Cain Pick-up)	150,000.00
05.	Facilitation of Districts Local Governments to mobilize farmers, create awareness and provide technical guidance during development of irrigation facilities.	45,000.00
06.	Environmental and social safeguards monitoring and reporting	220,000.00
07.	Environmental Screening and Preparation of ESIA's, ESMPs and related safeguard management plans for investments funded from component 1	420,000.00
08.	Environmental and Social Audits for projects investments in the target areas.	360,000.00
<b>Total Budget Estimate for ESMF Implementation</b>		<b>1,300,000.00</b>

**ESMF Disclosure**

This ESMF will be disclosed in compliance with relevant Ugandan regulations and the World Bank Operational Policies. At the national level, once the ESMF is finalized, MWE will submit it to the World Bank for their review, clearance and disclosure in their website and Government's disclosure in the print media. MWE will upload the ESMF and other safeguards for the project onto its website <https://www.mowe.go.ug/> and invite the public to access and review the documents. The Ministry will also provide copies of the ESMF and RPF safeguards documents in the project to the public in its public libraries in its research institutes who will be participating in the project. The ESMF and the RPF alongside other safeguards documents will be disclosed at the World Bank's website and made available to any interested persons for public access and for public information and comments/feedback as will be necessary. Implementation and Institutional capacity for safeguard management in the project.

# 1 INTRODUCTION

## 1.1 BACKGROUND

Agriculture remains the mainstay of Uganda's food security at both the household and national levels and has been a significant contributor to GDP (24%), to export revenues (about 48%) as well as providing a livelihood for over 70% of the population (*Uganda Irrigation Master Plan, 2010*). Uganda's National Development Plan II (2016-2020) and Vision 2040<sup>3</sup> recognize agriculture as being a central sector to the country's food security, economic growth, income enhancement and employment. However, with effects of climate change and the increasingly unreliable rainfall pattern, the need for investment in irrigation and climate resilience has become of paramount importance. Only about 5% of the irrigation potential of Uganda has been exploited presently. The NDP II (2016-2020) clearly lists irrigation as a high priority and stipulates that the country will substantially scale up investment in irrigation development, smart-agriculture and agribusiness development to move the Uganda peasants from subsistence cultivation (majority at present) into modern commercial farming to increase production, productivity and farm income.

The GoU has developed a draft Irrigation Master Plan for the period 2010-2035 which targets to expand irrigation infrastructure to cover at least 70% of surface water irrigation potential by 2035. This will increase the total agricultural land under irrigation from the current 14,418ha to about 420,000ha by 2035. As a result, the GoU has ranked irrigation as the third most important infrastructural investment that will facilitate economic transformation of the country as envisaged under Vision 2040. The Uganda Irrigation Modernization and Climate Resilience Program – Phase I is designed to assist the GoU increase the area under irrigated agriculture. The project will contribute to improvement of farm incomes, rural livelihoods, food security and climate resilience, sustainable natural resources management and agricultural enterprise development.

To support the country's development priorities as highlighted in the NDPII, the development objectives of the project will focus on increasing agricultural productivity and institutional capacity for irrigation service delivery in targeted areas of Uganda. The key results of the proposed investment would be measured by the following outcome indicators (non-inclusive): (a) agricultural productivity, in terms of agricultural production per unit of land or water (kg/ha, or kg/m<sup>3</sup>); (b) area provided with irrigation and drainage service new and improved (corporate indicators, ha); (c) number of beneficiaries (number, gender-specific); (d) irrigation scheme management institution and cost recovery mechanism established; and (e) number of farmer cooperatives or agribusiness enterprises supported.

Under its Component 2 will supporting services geared towards value chain development especially access to extension services, finance and markets as well as farmer-driven agribusiness development and private sector investment. This will include agribusiness development for climate smart livelihoods aquaculture (fisheries), apiculture (honey production), seedling production and crop intensification; business skills development especially among youths (capacity development, market development, cooperative development, facilitate access to finance); and youths in agribusiness development activities.

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<sup>3</sup> Uganda's Vision 2040 is "A transformed Ugandan society from a peasant to a modern and prosperous country within 30 years". It aims at transforming Uganda from a predominantly peasant and low-income country to a competitive upper middle-income country with per capita income of about US\$ 9,500.

The project will be implemented over a five-year period in Kabuyanda, Matand/Enengo, Nyimur and Amagororo in Isingiro, Kanungu, Lamwo and Tororo districts respectively. Component 2 will be implemented on all irrigation schemes financed under the project with Kabuyanda, Matanda/Enengo in phase 1 while Nyimur and Amagoro will be covered in the subsequent phase.

## 1.2 PROPOSED COMPONENTS

The Project will support Irrigation and Drainage Service Development (Component 1), choosing irrigation models responding to local needs and opportunities. The Project has as core focus the development of two new large-scale irrigation schemes in Kabuyanda and Matanda/Enengo, both in the West Region and develop a pipeline for future investments in Amagoro in the East Region, and Nyimur in the Northern Region (Figure 1), still inexistent in Uganda, which allows for economies of scale at all levels, thus allowing to tackle one of the core issues that Ugandan's farmers are facing in terms of access to markets. However, this model, to be successful, requires strong institutions and clear accountability for O&M, which might represent a challenge in Uganda based on the experience with medium-scale irrigation schemes. In order to build on these lessons and contribute to the institutional development of the irrigation sector in the country, the Project will also support O&M of existing medium-scale irrigation schemes (to be identified). Finally, the Project will pilot support to small and micro-scale irrigation, building up on the more successful experience of farmer-led irrigation model in the country, with an eye to leveraging private financing. Irrigation services will be developed hand in hand with Support Services for Agricultural Production and Value Chain Development (Component 2), cognizant of the need to expand use of other production inputs (improved seeds, fertilizers, machineries) to increase yield, enhance diversification, and intensification; and of the opportunity of irrigation to become the anchor for the development of value chains and strong producer organizations. The Project will keep a focus on sustainability, through Institutional Strengthening and Implementation Support (Component 3).

### 1.2.1 COMPONENT 1: IRRIGATION AND DRAINAGE SERVICE DEVELOPMENT (US\$170 MILLION)

Component 1 will construct new large-scale irrigation schemes, carry out activities for the Operational and Maintenance (O&M) of new and existing schemes, develop studies for future schemes, and implement integrated catchment management interventions. This component will be implemented by MWE, with the exception of a reforestation activity which will be implemented by the National Forestry Authority (NFA).

#### 1.2.1.1 SUB-COMPONENT 1.1: INFRASTRUCTURE DEVELOPMENT

Activities will include: (i) dam construction and associated head-works; (ii) construction of irrigation networks (pipes, canals, hydro-mechanical equipment); (iii) on-farm irrigation works and equipment; (iv) construction of drainage networks; (v) construction of access and scheme roads; (vi) construction of scheme offices, sanitation facilities, and weather stations; (vii) technical assistance for preparation of feasibility studies and detailed designs for irrigation schemes; (viii) technical assistance for monitoring and control of works; (ix) technical assistance for O&M of irrigation schemes (including WUAs); (x) technical assistance for environmental audits and implementation of the Environmental and Social Management Plan (ESMP).

#### 1.2.1.2 SUB-COMPONENT 1.2: INTEGRATED CATCHMENT MANAGEMENT

Activities will include: (i) technical assistance for the preparation of scheme-specific catchment management plans; and (ii) implementation of the interventions identified in the catchment management plans.



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#### 1.2.2 COMPONENT 2. SUPPORT SERVICES FOR AGRICULTURAL PRODUCTION AND VALUE-CHAIN DEVELOPMENT (US\$20 MILLION)

Component 2 will create and strengthen farmer groups<sup>4</sup> in marketing, finance, and organizational management; facilitate access to quality inputs and appropriate technologies and practices with the aim of improving production and productivity; and support value chain development and market (domestic and regional) linkages to increase the value of traded items for better economic gains. The component will take a value chain approach, focusing on key commodities such as coffee, bananas, horticultural (fruits and vegetables) crops, and forage. This component will be implemented by MAAIF.

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##### 1.2.2.1 SUBCOMPONENT 2.1: FARMER ORGANIZATIONAL CAPACITY ENHANCEMENT AND SUPPORT.

Activities will include technical assistance to create and strengthen farmer groups.

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##### 1.2.2.2 SUB-COMPONENT 2.2: PRODUCTION AND PRODUCTIVITY IMPROVEMENT

Activities will include: (i) technical assistance to provide extension services, facilitate access to inputs, promote good agricultural practices, sustainable land management practices, and integrated pests and disease management; (ii) matching grants to facilitate access to inputs (seeds, fertilizers, agro-chemicals), equipment (machineries) and irrigation technology (farmer-led irrigation); and (iii) purchase of small goods.

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##### 1.2.3 SUB-COMPONENT 2.3: VALUE ADDITION AND MARKET LINKAGES

Activities will include: (i) technical assistance to support value chain actors in improved post-harvest handling, agro-processing, access to financing services, access to markets and market information; and (ii) matching grants to facilitate access to post-harvest handling and processing tools, equipment and machinery.

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#### 1.2.4 COMPONENT 3. INSTITUTIONAL STRENGTHENING AND IMPLEMENTATION SUPPORT (US\$10 MILLION)

Component 3 will provide project implementation support, studies and technical assistance for institutional strengthening of MWE and MAAIF. This component will be implemented by MWE. Activities will include: (i) purchase of project implementation goods (ICT Equipment, vehicles); (ii) technical assistance to the Project Management Unit (PMU); (iii) travel costs; and (iv) technical assistance to MWE

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<sup>4</sup> Including Cooperatives, Associations, Rural Producer Organizations and Area-based Commodity Cooperative Enterprises.

and MAAIF in irrigation regulations/guidelines and necessary supporting studies (e.g. irrigation water tariff) for implementing the National Irrigation Policy.

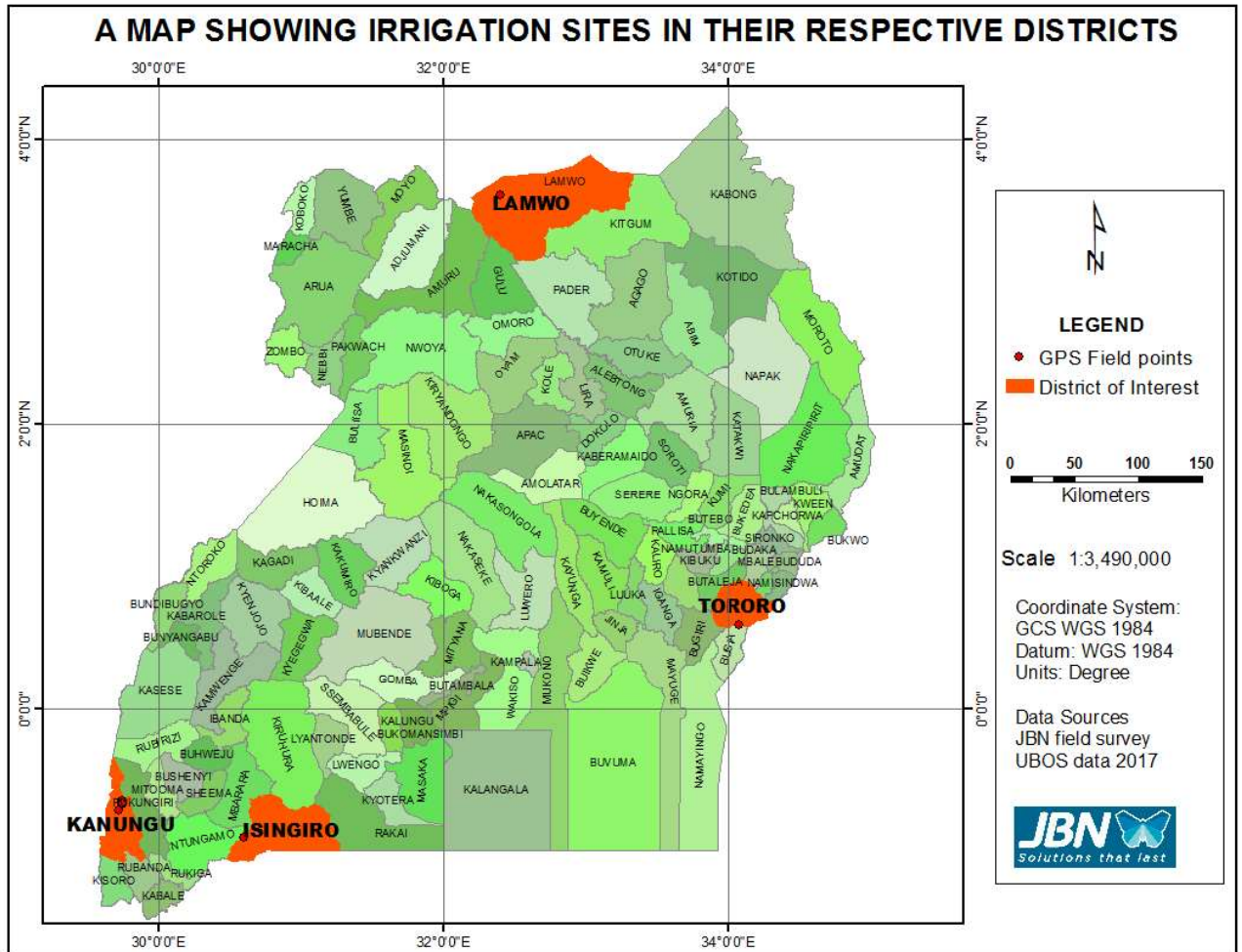


Figure 1: Location of the planned irrigation schemes in Uganda

### 1.3 PROJECT JUSTIFICATION

#### 1.3.1 GROWING CHALLENGES OF WATER SCARCITY

Water is a key ingredient in Agricultural production and productivity. Currently the agricultural production in Uganda is overly dependent on rain. This conventional rain-fed agricultural production is presently threatened by climatic changes resulting in poor crop and livestock production and productivity and reduces livelihood revenues accruing from the agricultural sector.

Farmers have continued to grapple under the effects of climate change due to over reliance on rain-fed agricultural though there is great potential to harness the available water in order to increase agricultural production and productivity. Water demands for irrigated agriculture are expected to grow exponentially in coming years as climate change perpetuates unreliable rainfall patterns. Securing availability of water for

agriculture will guarantee food security and the livelihood of the residents, including the most vulnerable groups and addresses the need of the very poor in society. Up-scaling irrigated agriculture in Uganda is therefore crucial.

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#### 1.3.2 LIMITED ACCESS TO AGRICULTURAL FINANCING

Currently farmers face a challenge of low quality of produce and have limited access to finance markets. This has been prompted by inadequate agronomic practices including storage and processing of produce to the desired quality. Furthermore, sustainability of the existing irrigation infrastructure is grossly affected by poor catchment management practices and ineffective operation and maintenance which results in reduced functionality of the systems. It is therefore pertinent that Farmer Based Management Organizations (FBMOs) are established to ensure sustainable management of these systems.

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#### 1.3.3 LIMITED LEVEL OF OPTIMAL LAND UTILIZATION

The country has relatively abundant land and water resources which are highly underutilized, yet irrigation development is still at a very low level. The estimated irrigation potential varies among the conclusions of different studies depending on the levels of economic rate of returns, e.g. 1.1million ha (IFPRI, 2010) and 3.0 million ha (NBI 2012). To date only some 15,000 ha out of the 8.85 million ha of land cultivated is irrigated (less than 0.2%), the rest is rain-fed. At the same time, food security, food production and nutrition need for fast growing population in Uganda remain an important concern. Agricultural production is rain-dependent with low productivity, very vulnerable to changing climate as evidenced in this year's drought.

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#### 1.3.4 NEED FOR INTEGRATED NATURAL RESOURCES MANAGEMENT

The Uganda Irrigation Modernization and Climate Resilience Program – Phase I is intended to consolidate and expand the GoU efforts towards irrigation development in the country to address gaps and emerging issues. The project will adopt an integrated natural resource development in conjunction with development of human resources to achieve sustainable growth of food production as well as supply of produce to the export market. Irrigated agriculture will be the centerpiece of the project around which all other natural resource development will evolve. With the development of the proposed schemes, smallholder farmers will transform from climate dependent rain-fed farming to more sustained value-added market-led agriculture for export and or import substitution.

The Project is consistent with this development agenda in Uganda. The Project's key activities, notably, development of irrigation infrastructure, promotion and development of agribusiness, and, integrated natural resources management, to enhance household incomes are consistent with the country's new Agricultural Sector Support Programme (ASSP), both of which prioritize investment in water for production and promote investment in sustainable natural resource use, the Rural Development Strategy (RDS) of the Ministry of Finance, Planning and Economic Development (MoFPED) which focuses on rural infrastructure development and the National Agriculture Policy 2013.

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#### 1.3.5 ADDRESS FOOD SECURITY ISSUES

The Project activities will also lend support to the Government's plans for food and nutritional security, sustainable agricultural productivity and natural resources, climate change challenges, and agribusiness development and marketing.

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### 1.4 PREPARATION OF ESMF

The main objective of the Environmental and Social Management Framework (ESMF) is to provide general policies, guidelines, and procedures to be integrated into the implementation of the IDCRP Project. This Framework has been developed to identify the environmental and social requirements needed to ensure that all sub-projects follow the national environmental requirements: policies, laws, regulations and guidelines and the World Bank's Environmental and Social safeguards policies. The ESMF provides guidance which will ascertain that environmental and social issues are being addressed effectively for the successful appraisal, design, and implementation of the sub-projects.

Therefore, the implementation of environmental and social mitigation measures for minimizing negative impacts will be carried out during the implementation of each sub-project. The Environmental and Social Management Framework (ESMF) is focusing on the screening procedures that should be taken by the IDCRP during the selection of sub-projects and supervision, monitoring and evaluation of the impacts during project implementation. The screening process of sub-projects should be carried out according to the requirements of OP 4.01 as well as EIA Guidelines, which are similar. The WB will review the EA process carried out by the IDCRP, through reviewing progress reports and reviewing ESAs prepared for all sub-projects.

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#### 1.4.1 PURPOSE OF ESMF

Overall, the purpose of the ESMF is to ensure that interventions under the Irrigation Development and Climate Resilience Project will be undertaken in a manner that avoids and minimizes environmental and social impacts as much as possible. **Except Kabuyanda Irrigation scheme**, specific project locations have not been conclusively identified at this stage, hence the ESMF provides a general impact identification framework to assist project implementers to screen the projects and institute measures to address adverse environmental and social impacts. For future projects within the Irrigation Development and Climate Resilience Project framework, the ESMF describes the procedures to assess environmental and social risks. This ESMF also provides guidance on how environmental and social aspects shall be identified, assessed and managed.

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#### 1.4.2 OBJECTIVES

The objectives of the ESMF are:

- a. Establish clear procedures and methodologies for environmental and social planning, review, approval and implementation of Irrigation Development and Climate Resilience Project sub-projects;
- b. Prescribe project arrangements for the preparation and implementation of sub-projects to adequately address World Bank E&S Safeguard Policy requirements;
- c. Assess the potential generic environmental and social impacts of envisaged investments in the project;
- d. Propose generic mitigation measures which will guide mitigation of the identified negative impacts;
- e. Specify appropriate roles and responsibilities, and outline the necessary reporting procedures for managing and monitoring environmental and social concerns related to subprojects;
- f. Determine any capacity building and technical assistance that could be needed to successfully implement the provisions of the ESMF in the institutions that have a role in the implementation of the ESMF; and
- g. Establish the funding requirements to implement the ESMF.

Proposed Irrigation Development and Climate Resilience Project activities for the Irrigation schemes development in Isingiro, Kanungu, Lamwo and Tororo. The feasibility study and preliminary design for Kabuyanda are completed and a design review is underway. The ESIA for Kabuyanda Scheme has been prepared and is under review by the World Bank. Since the Feasibility Studies and Engineering Designs for Amagoro, Matanda/Enengo and Nyimur have not yet been prepared, and no specific sites and locations are known for Component-2 activities, this therefore, necessitate the preparation of an Environmental and Social Management Framework. The final ESMF report will serve as the framework within which ESIA's and ESMP's will be developed once the exact locations of the subprojects become known and feasibility and detailed designs are available.

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#### 1.4.3 POTENTIAL USERS OF THE ESMF

The ESMF has been prepared as a reference manual for use by key stakeholders to be involved in the planning, implementation, management and operation of the proposed Irrigation Development and Climate Resilience Project. As a reference material, the ESMF may be useful to the following project key stakeholders: financing agency (World Bank), the Ministry of Water Development and Environment, Ministry of Lands, Housing and Urban Development; Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Gender, Labor and Social Development (responsible for social issues in development processes), the National Environment Management Authority (NEMA), the line district local governments, local farmers and water use groups/associations. In all, the ESMF will be a tool that will guide implementation, monitoring and general management of environmental and social issues during the various stages of project implementation by its players.

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#### 1.4.4 APPROACH AND METHODOLOGY TO THE PREPARATION OF THE ESMF

The following were employed in the preparation of this ESMF:

##### 1.4.4.1 KICK-OFF MEETING WITH THE CLIENT

On 1<sup>st</sup> August 2018, the consultant held a Kick-Off Meeting with the client at the Ministry Headquarters to agree on the scope, deliverables and stakeholders to be consulted during the study. The meeting was chaired by the Assistant Commissioner Water for Production and attended by the Principal Engineer and Environment Officer in the Department of Water for Production. The meeting served to provide clarifications on the deliverables, timelines and sounded the need for exhaustive consultations to be conducted during the study. Of key importance was the need to ensure timely delivery of the deliverables which should be within the timelines of processing the project as per the project schedules.

##### 1.4.4.2 DOCUMENT REVIEW

A desk review of available secondary information relevant to the project was undertaken and included Draft Project Concept (PCN), Terms of Reference (ToRs) for the preparation of the ESMF and RPF. Other documents reviewed included:

- a. Ugandan environmental policies and legal framework documents;
- b. Strategic Program for Climate Resilience: Uganda Pilot Program for Climate Resilience (PPCR) Pilot Program for Climate Resilience (PPCR) May, 2017, MWE;
- c. Agricultural Sector Strategy Plan 2015/2016-2019/2020, MAAIF;
- d. Second National Development Plan (NDP II) 2015/16–2019/20, MoFED-Kampala-Uganda;
- e. Climate-Smart Agriculture (CSA) in Uganda, 2016;
- f. ESMFs from MAAIF for Multi-Sectoral National Project, November 2014;
- g. ESMF for Agricultural Cluster Development Project, May 2014

- h. A National Irrigation Master Plan for Uganda (2010-2035), MWE
- i. ESMF for Regional Pastoral Livelihoods Resilience Project, 2013; and
- j. UBOS Statistical Abstract, 2017
- k. Project Concept Note and draft PAD, 2018.

Information for preparation of the ESMF has also been collected through a number of research methods, which include review of related literature from published and unpublished documents, field investigations and consultation with key stakeholders. The field investigations and public consultations were conducted in the areas of; Matanda, Kabuga, Bugongi, Rushoroza and Kayembe in Kihhi Sub-County, Kanungu District, Kabuyanda, Kagoti, Kyamazinga, Katooma, Kasherira, Nyamiyaga and Kanywamaizi in Kabuyanda Town Council, Kabuyanda Sub-County and Kikagate Sub-county in Isingiro District and Magola, Malawa and Amagoro in Tororo District. Key stakeholders consulted included central government officers in districts and communities where the projects will be implemented, officials from the line Ministry of Water and Environment, MAAIF, NFA, NEMA and local and districts councils as well as persons who would be affected by the project. The list of stakeholders conducted during this preparation of this ESMF is provided in Annex 1.

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#### 1.4.4.3 FIELD INVESTIGATIONS

The Team travelled to the project areas in Lamwo (especially Paracele and Padwat) for Nyimur, Kabuyanda in Isingiro, Matanda/Enego in Kanungu District and Amagoro in Tororo district. The main purpose of the site visits was to check out the current status and land use practices in the project area and relate it to the irrigation development project. During the field investigations, representative target communities were met and involved in informative discussions to determine their need of the project since they are the primary beneficiaries.

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#### 1.4.4.4 STAKEHOLDER CONSULTATIONS AND DISCLOSURE

##### 1.4.4.4.1 Overview

Consistent with best practice in developing ESMFs, consultations were held with relevant stakeholders. The stakeholders and beneficiaries of the project were identified after undertaking literature review and consultations with the client. Consultative meetings were held during field visits with the key stakeholders and institutions which included: district local government officials, sub-county officials, local leaders and project target communities in all project districts. At districts Levels, consultative meetings were held with; the District Planners, the District Production Officers (DPO), the District Community Development Officers (DCDO), District Forest Officers, District Labour Officers, Probation Officers the District Agricultural Officers, the District Water Officers, the Natural Resource/Environment Officers, Physical Planners, and the Fisheries Officers. At the sub-counties, the Sub-county Chiefs and the Community Development Officers were consulted while at the community levels; local leaders especially the LC1 Chairmen, a representative number of the target communities and farmers were met as in Annex 1.

##### 1.4.4.4.2 OBJECTIVES OF THE STAKEHOLDER CONSULTATIONS

The consultations with these stakeholders were carried out to specifically achieve the following objectives:

- a. To provide information about the project and to tap stakeholder information on key environmental and social baseline information in the project area;

- b. To provide opportunities to stakeholders to discuss their opinions and concerns, and accordingly influence project design;
- c. To identify specific interests and the participation of the poor and vulnerable groups can be enhanced; and
- d. To inform the process of developing appropriate management measures as well as institutional arrangements for effective implementation of the IDCRP, and thus promote ownership and sustainability of the project.

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#### 1.4.4.5 METHODOLOGY AND IDENTIFICATION OF STAKEHOLDERS

Stakeholder consultations were interactive in nature and targeted at different levels: national, district, and the local communities and included the relevant representatives in each, as illustrated in Table 6. Consultations were undertaken using key informant interviews and focus group discussions. The discussions and community meetings were held at the village levels and involved meetings with youth, women and men. During the preparation of the ESMF, a list of stakeholders for both national and Districts levels was prepared and agreed upon with the client. The Consultant made appointments with the agencies at national level and thereafter, held such meetings. At the districts, the Consultant interfaced with the Chief Administrative Officers (CAOs), Local Council V Chairmen (LC V) and the Resident District Commissioners (RDCs). Through the CAOs, the line district technical staff were mobilized i.e. DEOs, CDO, Water Officers, Agricultural Officers, Fisheries and Labor officers and such officials were met. At the community levels, the LCV provided contacts for the local areas leaders with whom the consultant made plans and agreed details of the meetings, participant's and venues of the meetings.

The discussions aimed to enlist feedback from stakeholders on the following:

- a. What are the key income and livelihoods activities they are engaged in their areas?
- b. What challenges they face in undertaking their activities?
- c. What are they doing to over-come such challenges?
- d. Project issues in terms of their understanding of the project?
- e. Availability of land for the project?
- f. Issues relating to the likely impacts during project implementation; and
- g. What will be their contribution to the project?

A list of people met and details of the discussions during the consultations is provided in Annex 1

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#### 1.4.5 SUMMARY OF KEY ISSUES DURING THE CONSULTATIONS

A summary of the key issues that emerged during the consultations is provided under Table 1 and Annex 1.

**Table 1: Findings of consultations with stakeholders in the project areas**

Project areas	Key issues and concerns raised by stakeholders
Amagoro areas	<div data-bbox="672 302 1393 814" data-label="Image"> </div> <p data-bbox="662 821 1354 846"><b>Figure 2: Consultations with the local residents in Amagoro site</b></p> <p data-bbox="613 852 1459 1037">Local residents in the project area expressed a high level of Land insecurity that the project is intended to grab and take ownership of their land after project implementation. The LCIII chairman and the CDO, helped them understand that this is not the case and more sensitization has to be undertaken. Other than that, they are in full support of having the project kick off and thy hope to produce more once the project is in place.</p> <div data-bbox="688 1041 1377 1549" data-label="Image"> </div> <p data-bbox="769 1556 1252 1581"><b>Figure 3: Meeting with CAO and CDO Tororo</b></p> <p data-bbox="613 1587 1284 1612"><b>Consultation meeting with the Tororo District CAO and DCDO</b></p> <p data-bbox="613 1619 1459 1736">They suggested that adequate sensitization has to be carried out continuously to ensure project sustainability. They also added that MWE has to work hand in hand with MAAIF to achieve the project goals and as a district; they are ready to offer all needed support to ensure the irrigation scheme is operational.</p>



Kabuyanda areas



**Figure 4: Meeting with Kabuyanda community**

**Consultation meeting with the communities from Kabuyanda Sub-county**

- a. Members expressed the need to be involved in the project activities especially its construction as they can provide labor or supply construction material.
- b. They need to be compensated in case they are to relocate, or their property is tampered with by the implementation of the project.
- c. They are worried of the population influx in the project area, construction accidents and operation system failure of the scheme.
- d. They also reported that, they urgently needed the project to reduce their dependence on rainfall which hinders their agricultural production and hoped their agricultural production would be boosted.



**Figure 5: Consultation meeting with Environment Department Staff Isingiro District**

They raised the following concerns;

- a. Reduction of water levels downstream,
- b. De-vegetation especially cutting of trees to construct the project
- c. Change in land use, and
- d. Improper use and disposal of agrochemicals.

Nyimur areas

The community attitude towards the proposed project is mixed; some people are in support of the project while others are not. Some people have heard about the proposed project but without clear information, it was just hearsay. The community has not had a formal sensitization from the authorities (government) about the project. As such, most of them are not aware of what the project will entail or how it may affect them (positively or negatively). However, those who are aware of the project are willing to offer land for the project components and also eager to provide labour during the construction phase. They have stressed the high levels of unemployment especially of among the youths in the area and hoped that the project will to a very large extent solve this problem.



**Figure 6: Field meetings in rural areas in Palabek Ogili**

Community members wish to participate in the project in several ways such as: providing physical labour in clearing bushes for the project and boundary opening, identifying the actual excavation points; providing foodstuff to the workers, providing land, participating in planning and implementing the project, participating in monitoring and supervising the project activities especially the fishing activities, and providing general protection and management of the dam and related infrastructure. The project is a good gesture to the district administration since it will help in resolving the water scarcity problem being faces in the project area. Currently the district is experiencing extended dry spells, and during the dry season the water level goes down making the borehole yields low. The herdsmen move long distances in search for water for their animals during the dry seasons. Availability of the dams shall provide an alternative source of water for both domestic use and for production throughout the year. The district administration is committed to enhance this positive impact of the project.



**Figure 7: Stakeholder meetings in Ogili Palabek Sub-county**

Matanda/Enengo areas



**Figure 8: Meeting with Head Teacher, Rushoroza Seed Secondary school**

The Head teacher pointed out that the contractors should observe school rules not interrupt school programs i.e. measures to reduce noise and avoid child labor.



**Figure 9: Consultative meeting with Kihihi Sub-county communities**

They raised the following concerns:

- a. The residents showed enthusiasm for the project as it will enhance their agricultural productivity.
- b. They will be able to grow crops all year around and address food security at household levels.
- c. A committee should be selected for proper management of the scheme
- d. The scheme will provide them with employment opportunities;
- e. Seek that the irrigation project is extended even to other areas outside the command zone
- f. They want compensation in case their property is taken by the project activities; and from past experiences, they expressed fears of project workers taking up their wives.

## 2 BASELINE ENVIRONMENTAL AND SOCIAL SETTINGS IN THE POTENTIAL PROJECT AREAS

The description of the baseline environmental and social information is based on the broad areas earmarked for the project. However, at this point, it is not clear where the various components will be implemented.

### 2.1 AMAGORO PROJECT SITE DESCRIPTION

#### 2.1.1 SITE LOCATION

Amagoro project site is located in Malawa B village in Papoi Parish in Magola Sub-county in Tororo District in the Eastern Uganda<sup>5</sup> and the site appr. 13km from Tororo Town.

#### 2.1.2 PHYSICAL ENVIRONMENT

##### 2.1.2.1 TOPOGRAPHY

Topography of the area is a flat to mild sloping landscape with undulating plain topography with a few hills in some places, the highest altitude is noticed at Nebolola hills, Lumino Sub-county, at about 1,193amsl. Its lowest altitude is in the valley of R. Malaba at 1,000amsl<sup>6</sup> which will be used to provide water for this planned Irrigation Development project.

##### 2.1.2.2 CLIMATE

According to the District development Plan 2015/16-2019/20, Tororo District has a Sub-Humid climate with orographic and bi-modal rainfall with peaks during the months of May and October with a dry season from December to February. Relative humidity ranges between 52-89% with moderate rainfall and temperatures. The sub-total rainfall lies between 1,130-1,720mm a year with a temperature between 16.2°C-28.7°C with relative humidity of between 52%-89% and Tororo town is 1,459.5m asml.

##### 2.1.2.3 WATER RESOURCES

Generally, the district does not have adequate surface water resources, only 13% of Tororo district is covered by water bodies. It is believed that water reserves exist in the fissure and aquifers of the rocks as evidenced by the boreholes that have been drilled into them. Most of the wetlands have been converted to cultivation of rice. R. Malaba will be the source of water for the irrigation project; the scheme will supply an area equivalent to 2,500ha in total.

#### 2.1.3 VEGETATION

There are different categories of vegetation ranging from farmlands to medium altitude forests through swamps to savannah. The medium altitude forests found in Tororo district is the moist semi deciduous type. In the project site is swamp vegetation characteristic of *Phragmites*, *Papyrus* species and palm trees. However, there are small scale tree plantations (Fig. 10-11) at household level planted outside the river ecosystem to provide wood fuel, timber and construction poles. Tree species planted include; *Eucalyptus grandis*, *Pinus caribaea* (pine), *Broussonetia papyrifera* and *Markhamia lutea*.

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<sup>5</sup> Tororo District Development Plan 2015/16-2019/20

<sup>6</sup> Busia Environment Profile Report, 2009



**Figure 10: Swamp vegetation characteristic of *Phragmites*.**



**Figure 11: Eucalyptus plantation**

## 2.1.4 SOCIO-ECONOMIC ENVIRONMENT

### 2.1.4.1 POPULATION

The district has an estimated total Population of 526,378 (NPHC, 2014) with 103,585 households, 93% male to female sex ratio implying that to every 100 females, there are 93 males. The population growth rate stands at 2.8% per annum. In most of the households, men are the house heads. The study area population shall comprise the area population at village, parish and sub county in target project sites. At the moment the tentative area population figures is summarized on Table 2.

**Table 2: Population of Amagoro project areas**

Project site area	Total Popn. (2014)	Male	Female	Farming HHs
Amagoro (Eastern Division Sub-county in Tororo District) at	19,074	9,048	10,026	1,198
<b>Total</b>	<b>19,074</b>	<b>9,048</b>	<b>10,026</b>	<b>1,198</b>

*Source: UBOS Sub County Report Eastern Region, 2014*

### 2.1.4.2 LAND TENURE

Although all the land tenure systems are well represented in the district; the project site area and it's the targeted command area are mostly communally owned plots of land which on average are 2 acres.

### 2.1.4.3 AGRICULTURE

In Amagoro site, communities grow mainly maize (Figure 14), rice, ground nuts, and beans, peas (both cow and green peas) vegetables such as cabbage, onions, carrots, *sukuma wiki*, *ddoddo*, and sugar cane for domestic consumption. Fishing farming and livestock rearing are also undertaken as main economic activities and animals kept are mainly cows, goats, poultry and piggery. Agricultural productivity is affected by climate changes especially fluctuation in rainfall patterns, high temperatures, longer dry spells, flash floods from river overflows, pest and disease, limited seeds and planting materials, low

market prices, poor postharvest handling, manipulation by middle men, poor farm labor tools. The average farm size is between 0.25-7 acres and farmers tend to cultivate close to the river banks (Fig.12).



**Figure 12: Cultivation extended up to the river banks**

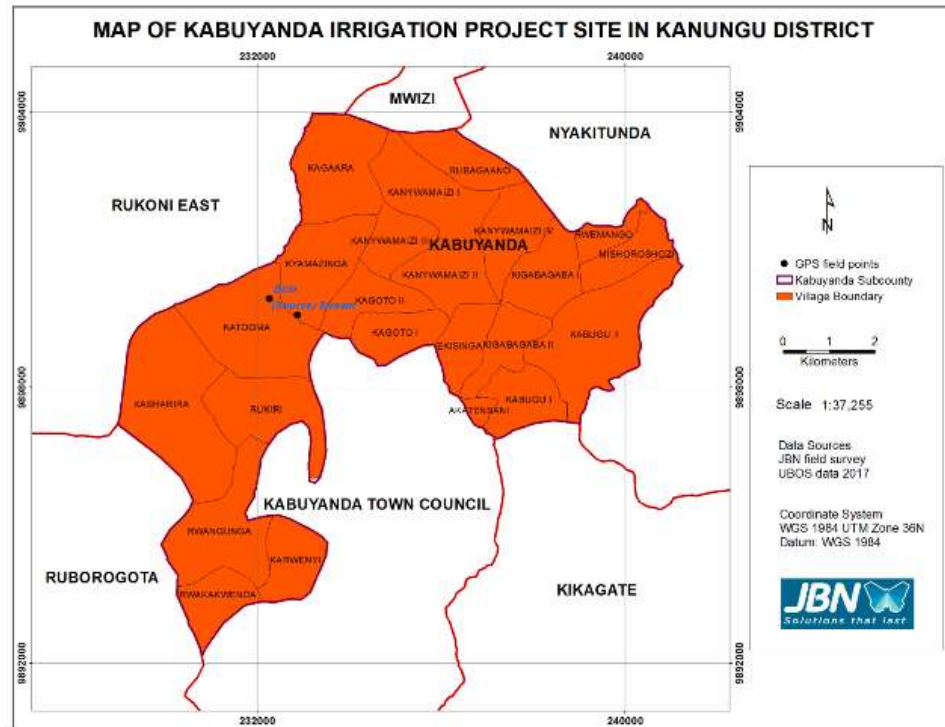
#### 2.1.4.4 FISH FARMING

Fish farming is also taking place in Amagoro site. But the major fishing is done on subsistence scale in river banks, swamps and mush lands. The most common fish species are mud fish, cat fish and tilapia. Locals use rudimentary fish gear made from papyrus and rattan materials that are got from swamps and wetland vegetation.

## 2.2 KABUYANDA PROJECT SITE

### 2.2.1 KABUYANDA PROJECT SITE LOCATION

Kabuyanda project site is located in Kagoto Village, Kanywamaizi Parish in Kabuyanda Sub-county; most of the irrigation development infrastructure will be constructed here. Isingiro district is situated in south western Uganda, 35km from Mbarara Town (Figure 13). It borders with the United Republic of Tanzania in the south, Rakai District in the east, Ntungamo District in the west, Kiruhura District in the north, Mbarara District in the north and north-west.



**Figure 13: Kabuyanda Project site**

## 2.2.2 PHYSICAL ENVIRONMENT

### 2.2.2.1 TOPOGRAPHY

The catchment is characterized by hilly mountainous terrain with steep slopes and high hilltops. Catchment elevations vary from 1,347m at the dam site to over 1,843 m at the upper reaches. The hill-sides are steep with average slopes of more than 30% but can be as high as 80%. The valley bottoms have milder slopes of less than 5%. The elevation in the irrigation area varies from 1,272–1,350m with mild slopes averaging 7% and rarely reaching 20%. The terrain in the irrigation area is flat to undulating with some areas having rolling terrain (Figure 14). There is soil erosion on the cultivated steep slopes and hillsides.





**Figure 14: The adulating hilly terrain**

#### 2.2.2.2 LAND COVER

The catchment land cover is a combination of modified vegetation, including farmlands, grasslands and pasturelands. Deforestation and conversion of bare land to farmland has left many hills bear with no vegetation cover encouraging soil erosion and landslides on the fragile slopes. The centre of the catchment has Rwoho Central Forest Reserve. The Forest Reserve is categorized as a secondary conservation forest in the National Forestry Nature Conservation Master Plan. In total the reserve covers an area of 9,100ha, of which 50 % is available for reforestation activities. Of the 50km of external boundary about 9km follows streams while 41km is an artificial boundary maintained as a planted cutline with earth corner cairns and boundary-directional trenches. The reserve lies on top of a large flat-topped ridge running from North to South (Figure 15). In total the project activities cover an area of 341.9ha within Rwoho Central Forest Reserve (CFR) planting area: 319.2 (93%), community planting area: 22.7ha (7%). The dominant land-use in the proposed irrigation area is subsistence agriculture though a transformation into more commercialized agriculture is expected once the project is operationalized.

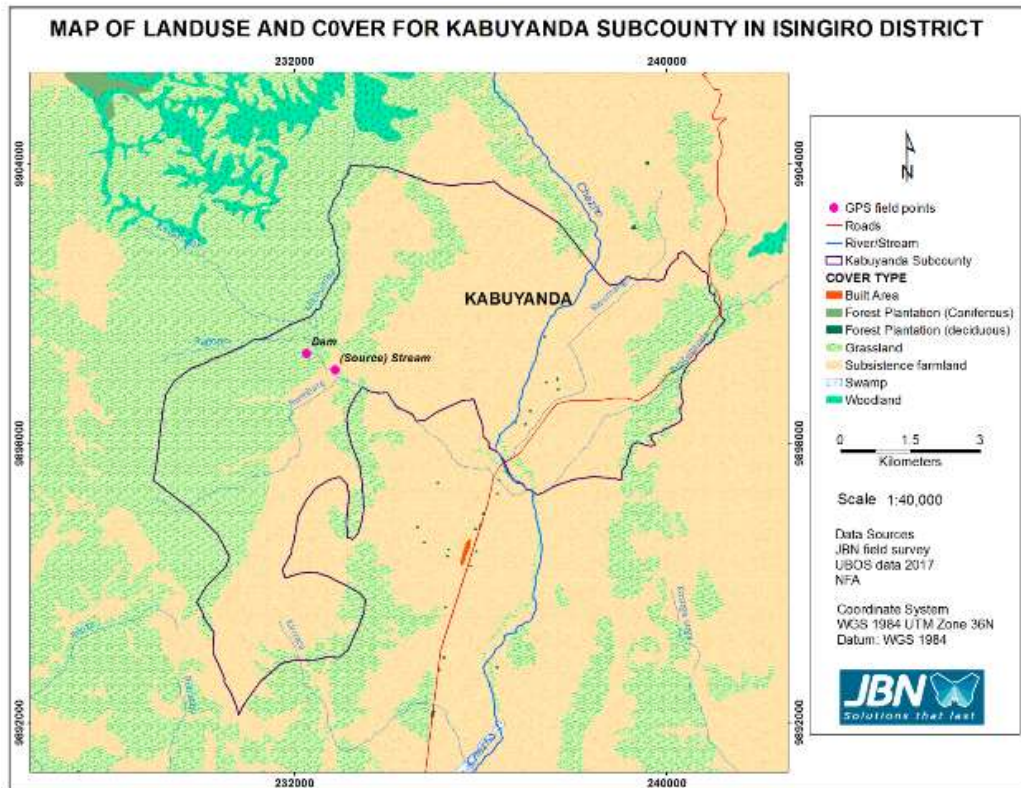


Figure 15: Land use in the project site

### 2.2.2.3 VEGETATION

The land cover of the project area is a combination of modified vegetation, including farmlands, grasslands and pasture lands. The land is farmed for crops like bananas, maize, coffee, vegetables and livestock production. Land has been converted to farming leading to deforestation and bare hills which encourages soil erosion and landslides on the fragile slopes. The project area is characterized by five vegetation types namely, anthropic landscapes, woodland, wooded grassland, thickets, swamp and aquatic vegetation. The dominant higher plants recorded in the irrigation command farmland area were *Erythrina abyssinica*, *Markharmia lutea*, *Coffea robusta*, *Eucalyptus cropostus* and *Euphorbia tirucalli*. The main crops in the irrigation command farmland area were beans, maize, cassava, Irish potatoes, sorghum, millet and bananas. The woodland vegetation type originally on the hill tops has been converted into grazing areas with only remnants of the woodland vegetation covering smaller sections of the hills. The most dominant plant species identified on the hill tops included *Erythrina abyssinica*, *Markharmia lutea*, *Parinari curatellifolia* and *Combretum mole*. Some sections of the hill tops within Rwoho forest reserve have been converted into *Pinus carribea* plantations. The hill slopes are converted into agricultural land with dominant crops being maize, beans, coffee, Irish potatoes, sorghum, bananas, cassava, sweet potatoes.



**Figure 16: Rwoho Forest reserve**



**Figure 17: Banana plantation mixed with coffee**

#### 2.2.2.4 CLIMATE AND WEATHER

The project area receives 1120 mm of rainfall annually in two rainy seasons. The first rainy season lasts from March-May bringing about 330mm of rainfall. The second rainy season lasts from August/September to December bringing about 450mm of rain. Rainfall data was available from 1948-2003. The stations had varying data lengths from 16 years at Kikunda Rwoho station to 34 years at Gayaza Isingiro. Mean annual rainfall varies between 840 mm and 1150 mm. Historical daily series of maximum, minimum and average temperature values from 1950-1999 were used to estimate Mean temperatures which varied between 19°C and 21°C with a peak around 26°C. The minimum temperatures ranged around 13°C. The annual evaporation rate is around 1350mm.

#### 2.2.2.5 GEOLOGY AND SOILS

The area is underlain by the Karagwe-Ankolean system which is of Cambrian origin. The dominant rocks include Arenites and Argillite which are mainly sedimentary rocks composed of indurated clay particles and varying sizes of silt particles. Instances of metacalcareous rocks (including shales, slates and sandstones), and undifferentiated gneisses are also occasionally encountered. Therefore, all the three major divisions of rocks i.e. Sedimentary, igneous and metamorphic are represented in the area. The dominant soils within the reservoir catchment are Lithic Leptosols which include very shallow soil over hard rock or highly calcareous material or deeper soils that is extremely gravelly and/or stony. Leptosols are unattractive soils for rainfed agriculture because of their inability to hold water but may sometimes have potential for tree crops or extensive grazing. Leptosols are best kept under forest. The dominant soils within the irrigation area are Haplic Ferralsols which cover extensive areas on the flat, generally well drained area. They are strongly weathered and tend to be associated with old geomorphic surfaces. The texture may vary from a sandy loam to clay.

#### 2.2.2.6 WATER, SANITATION AND HYGIENE

##### 2.2.2.6.1 SAFE WATER COVERAGE

The District faces acute problem when it comes to safe water coverage and access (Table 4) which affects both the refugees and the host communities. The District has safe water coverage at only 35% which is the households which have access to safe water supply. Kabuyanda S/C had the highest coverage which

is due to the gravity flow schemes and the protected springs that have been constructed there recently. The problem of access to safe water is dictated by the terrain of the area in which, cheap source cannot be constructed in some areas and thus, the need for certain types which are expensive.

**Table 3: Safe water coverage by sub-county in Isingiro**

Sub-county	Percentage (%)
a. Endiizi	01
b. Kashumba	03
c. Ngarama	03
d. Rugaaga	03
e. Birere	07
f. Kabingo	03
g. Kabuyanda	10
h. Kikagate	03
i. Masha	02
j. Nyakitunda	02

In the drought of 2016/2017, a number of livestock died in the district from starvation following prolonged drought in the area. There were media reports of people selling cows at as low as Ushs. 20,000 and more than 20,000 head of cattle were grossly emaciated (Figure 18) and could hardly stand. Water scarcity in Isingiro district has put women in Katembe and Kyarugaju parishes at risk as they travel long distances to look for sources in the cattle corridor. Residents in the areas say a number of women have been waylaid on their way to water points and raped.



**Figure 18: Emaciated cows in a farm in Isingiro district after 2016/2017 drought<sup>7</sup>**

#### 2.2.2.6.2 SANITATION

<sup>7</sup> *Isingiro Agriculture report, 2016/2017*

In the district, the latrine coverage in 2014 was 87%. However, field interviews indicate that latrine coverage in the areas is still low at an average of 60%. The soil structure does not support the traditional latrine structures. Sections of the communities have resorted to building their latrines in anthills which remains a challenge to the elderly and the disabled who can hardly access latrines which are sometimes erected on tops of anti-hills.

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## 2.2.3 SOCIO-ECONOMIC ENVIRONMENT

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### 2.2.3.1 POPULATION

As per the population and housing census 2014, the total population of Isingiro District was 486,360 people, 250,739 females and are males. The district has 101,623 households with an average size of 4.8 persons. Kikagate Sub-county has the highest population followed by Nyakitunga and Mbaare Sub Counties. The statistics indicate a high dependency burden on the older population.

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### 2.2.3.2 SEX OF HOUSEHOLD HEADS

Like the rest of the country and the district, the findings from the socioeconomic survey indicated that majority of the household heads are males (74.8%) and 25.2% are females. This is similar to the district statistics where 77.2% of the households are headed by males and 22.8% are headed by females.

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### 2.2.3.3 AGE OF HOUSEHOLD HEADS

The socioeconomic survey findings showed the average age of the household heads in the project area is 42 years with the youngest being 18 years and the oldest being 90 years. The results show that the majority of the household heads are still in their productive years and therefore commendable for employment opportunities on the project.

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### 2.2.3.4 ETHNIC COMPOSITION

The socioeconomic survey findings showed that the resident population in the project area is mainly comprised of the Bakiga (60.8%), Banyankole (26.3%), Bafumbira (12.1%), Baganda (0.5%), Batooro (0.2%) and Rwandese (0.2%). The socioeconomic survey revealed that majority of the households (57.5%) migrated to this place, purchased land from the local people they found and settled while (42.5%) households claimed that this is their ancestral land (they are /were borne here). The average duration the households have lived on their land is 18 years with the longest duration being 65 years and shortest being less than a year. This implies that the communities have strong social ties in the area. Findings from the socioeconomic survey showed that 83.3% of the household heads are married of which 68.2% are in a monogamous marriage and 15.1% are in a polygamous marriage; 10.3% are widowed, 3.7% are single, and 2.8% are divorced /separated. Most of the divorced and widowed household heads were female.

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### 2.2.3.5 WATER SUPPLY

Isingiro District is prone to drought and there is lack of adequate water for both human consumption and production. The average safe water coverage for the entire district is recorded at 35% which is far below the national standard of 66%. According to the National Population and Housing Census 2014– Isingiro District Profile, 12.3% of the households in the district have access to piped water while 6.1% access water through boreholes. Kabuyanda Sub County depends mainly on water from Gravity Flow Schemes (GWFS) and borehole water. The sub county has two Gravity Flow Schemes which include; Rwemango GWFS, Rwabymera and four boreholes scattered all over the Sub County. Other sources of water for households

in the sub county include springs and swampy water although the quality of the water from these two sources is poor in terms of taste, colour, smell and hardness.

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## 2.2.4 NYIMUR MULTY-PURPOSE IRRIGATION SCHEME

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### 2.2.4.1 PROJECT LOCATION

The proposed project is located in Lamwo at the north-eastern part of Uganda. Lamwo District is a district in the Northern Region of Uganda. The town of Lamwo is the site of the district headquarters. Lamwo District is bordered by South Sudan to the north, Kitgum District to the east and southeast, Pader District to the south, Gulu District to the southwest, and Amuru District to the west. The town of Lamwo is approximately 66km, by road, northwest of Kitgum, the nearest large town. This is approximately 150km, by road, northeast of Gulu, the largest city in the Acholi sub-region. The Nyimur Multipurpose Project is to be developed on the course of Nyimur River, which is the northern Ugandan tributary of the R. Aswa. Achwa is a major river in north-eastern Uganda, flowing northwest into Sudan where it is named the Aswa River and joins the White Nile.

The total area of the Aswa River basin is approximately 31,428 km<sup>2</sup>. Of these, approximately 27,631 km<sup>2</sup> lie within Uganda.

It is planned that; the Project is to have the following components:

- a. Irrigation component: geared towards food security of the area through the development of lowland rice, or other, cultivations;
- b. Small scale hydropower production;
- c. Livestock watering points (through abstraction from facilities placed at suitable locations so that the cattle do not interfere with the irrigated areas);
- d. Water supply in the adjacent areas;
- e. Flood mitigation measures; and
- f. Watershed management in the areas upstream of the head dam.

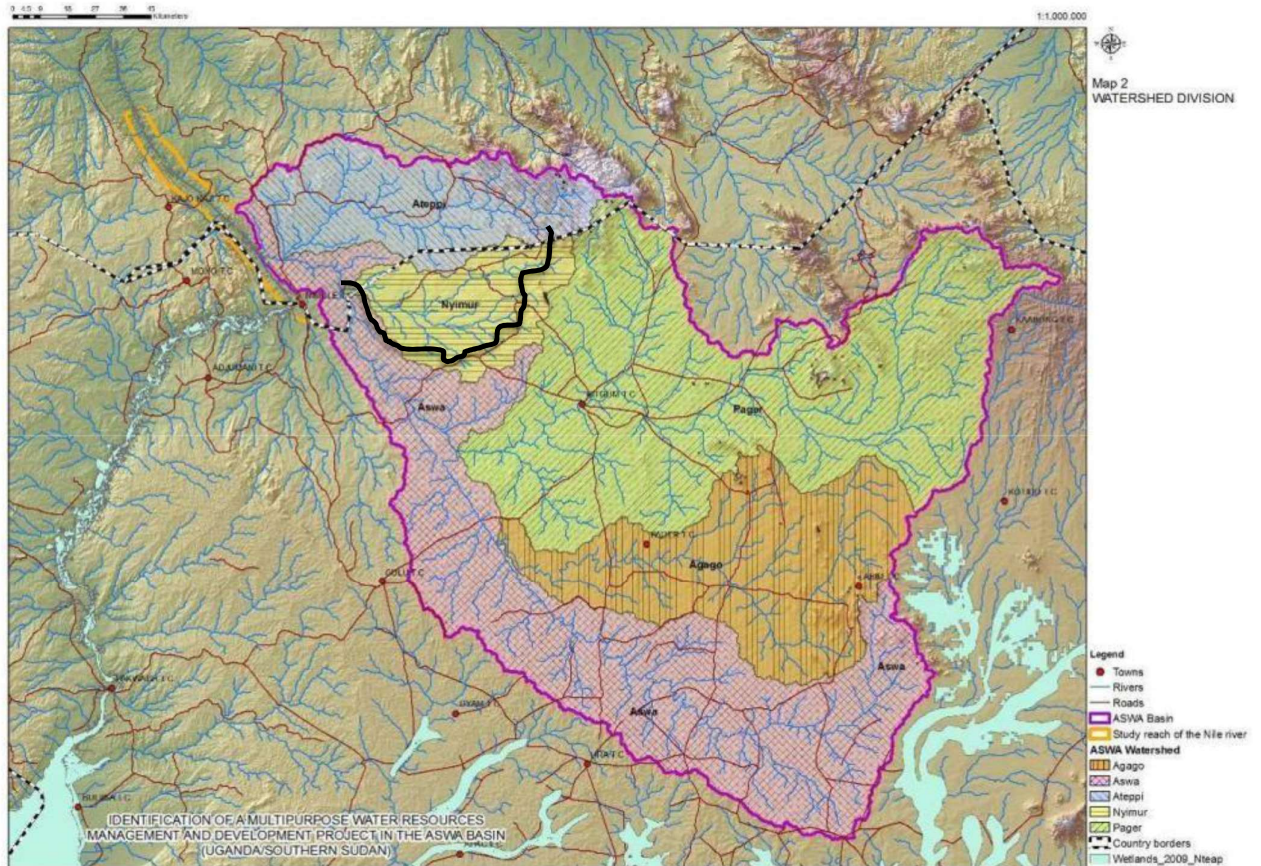


Figure 19: Map showing Aswa Basin with Nyimur Sub-basin inside a dark outlined area<sup>8</sup>

#### 2.2.4.2 BASELINE CONDITIONS

##### 2.2.4.2.1 TOPOGRAPHY

In the Ugandan side of the project, Lamwo District is generally flat; it lies at an average altitude of 1,100m.a.s.l. but is generally higher in the north and north east, where there are series of mountain ranges and slopes gently to the west and south west. Small hills are scattered across the landscape. The hills are slightly steeper, and the flanks have a very gentle slope. The catchment's maximum altitude is 2,166m.a.s.l. in the north-eastern side of the basin, but the portion higher than 1,200m.a.s.l. is very limited in extension and it is mainly included in Central Forest Reserve areas. From the East towards the West the topography gradually decreases from 1,200 to 750 m.a.s.l. in the central regions. The western part of the catchment is quite flat and has a lower point at about 640m.a.s.l.

##### 2.2.4.2.2 GEOLOGY

The geology of the project area dates back to approximately 3 billion years. The Nyimur sub catchment lies within the African plate, which is a continental crust that contains Archaean cratons dating at least

<sup>8</sup> Draft Feasibility Study Report for Nyimur Multi-purpose Irrigation Project, 2017s

2700 million years. It extends to South Sudan where the geological setting is similar with the exception that, the intrusives (granites) outcrop to a broader extent in particular at Ateppi Mountains.

#### 2.2.4.2.3 GEOMORPHOLOGY

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The terrain in the Nyimur sub-catchment varies significantly, ranging from relatively flat in the west (elevation about +600 to +800) to mountainous towards the north and the east (reaching up to elevation of about +2100). In the proposed dam areas (west part of the Nyimur sub-catchment), the terrain slopes do not exceed 10% inclination, with very limited exceptions, and usually have very mild slopes of up to 5%. The relatively flat landscape includes small and low hills scattered across the landscape, which are covered by grasslands, shrubs and small trees. The hills are slightly steeper, and the flanks have a very gentle slope.

The meandering flow of the Nyimur River and its tributaries in the area of the dams is indicative of the prevalent low slopes. The steeper region (slopes exceeding 10%) are mostly located in the mountainous areas of Ateppi, in the upstream part of the Nyimur river basin. Higher slopes also appear at the riverbanks, with the river flowing often lower than the surrounding areas, which is particularly visible during the dry season. The relatively flat terrain of the study area is accompanied by a relatively dense flow network, with smaller and larger streams and flow paths.

#### 2.2.4.2.4 SOILS AND TOPOGRAPHY

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The soils reported occurring in the project area largely comprise:

- a. Leptosols covering 68% of the project area – these are rather shallow, well drained friable soils of medium texture. They are mildly acidic with deficiencies of nitrogen, phosphorus, and potassium and zinc in some areas; and
- b. Nitisols covering 17% of the project area – these are deep, well-drained friable soils of medium texture. They are mildly acidic with deficiencies of nitrogen, phosphorus, and potassium and zinc in some areas.

Vertisols, with a high clay content and low permeability are found mainly in valley bottoms and occupy up to 15% of the project area. There are significant areas with high sodium content which would constrain crop production unless they are carefully leached by irrigation water, and compaction of lower horizons is common. The land suitability evaluation concluded that 11% of the surveyed area was highly suitable for intensive crop production, 27% moderately suitable, 39% marginally suitable, and 23% presently unsuitable. The proposed command area design aimed to locate the irrigation blocks to the most suitable soils as possible, taking also into consideration topographical and other constraints.

#### 2.2.4.2.5 VEGETATION

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By and large, the vegetation of Lamwo district and specifically, that of the project area can broadly be described to be open savanna woodland mosaic type which is comprised of; *Terminalia glaucescens*, *Combretum spp*, *Vitellaria paradoxa*, *Sclerocarya birrea*, mixed with *Borassus aethiopicum*, *Lannea ssp*, *Lonchocarpus ssp* and *Acacia spp*, associated with some species of tall grasses such as *Hypertheria dissolute*, *Hyparrhenia ssp*, and *Panicum maximum*. The riverine vegetation defers from the drier areas in terms of species composition and structure. The riverine is characterized by tall *Acacia Polyacantha*, *Acacia tortilis*, *Acacia sieberiana*, *Azelia africanus*, *Ficus sycomorus*, *Crateva adensonii*, and *Diospyros mespiliformis*, associated with *Phragmites ssp*, *Panicum maximum* and *Acalypha bipartat*.



The residents in the project area use charcoal and wood fuel as a source of cooking energy. There is also rapidly growing charcoal burning. In the study area, an estimated 15.1% of the women respondents to the household survey are involved in cutting/collecting firewood as a major occupation. In addition, 12.5% of the women are involved in burning and selling charcoal while 12.9% of the men are also involved in burning and selling charcoal. The significance of charcoal and fuelwood from natural and vegetation cover as a source of income and main source of energy for the communities is a critical factor.

#### 2.2.4.2.6 RAMPANT SEASONAL BUSH FIRES

Bush clearing occurs when opening land for farming, hunting, to enhance regeneration of pasture and also as a result of bushfires. The fires result from very dry conditions and poor farming methods such as slash and burn. The problem is particularly evident in the Ugandan side of the project. These fires result from burning activities during the dry season when farmers burn the bush as a way of clearing the farm area; during hunting when farmers smoke out animals from their holes and at times it is accidental, and this ends up destroying large chunks of vegetation (Figure 20).



**Figure 20: Severe bushfire in the dry season across the Nyimur project areas.**

#### 2.2.4.2.7 LIVELIHOOD ACTIVITIES

Farming, combining crops and livestock keeping, is the dominant livelihood activity by communities in the Nyimur River basin. Crop production is primarily rain-fed and changes in weather pattern (drought or excessive rain) often have devastating effects on food productivity. Livestock tethering is carried out during the rainy season and open grazing is practiced during the dry season.

Climate change, famine, loss of soil fertility and use of traditional farming methods have contributed to reduced agricultural productivity in the area. The locals use uncertified seeds and practice shifting cultivation which involves slashing and burning of vegetation. This not only degrades vegetation but also the soils rendering them infertile after a few seasons of cropping and exposes the soils to erosion. Climate change is one of the major environmental concerns in the area. This is characterized by increasingly long drought spells and/or sporadic irregular heavy rains and flooding, and this has greatly affected agricultural

production (Figure 21-22), by creating uncertainty among farmers as well as destroying their crops. Drought also affects the livestock in the area.



**Figure 21: Family clearing land through slash and burn for cultivation**



**Figure 22: Garden maize in Palabek Ogili areas stricken by drought**

#### 2.2.4.2.8 [HUNTING](#)

The area has a lot of natural vegetation and wildlife such as gazelles, dik diks and monkeys are found in the area. In the areas near river banks of Aswa, there is reported to be pronounced seasonal hunting which triggers bush burning (Figure 23). The household survey indicates that there is at least one youth group or a category of youth whose group is involved in poaching.



**Figure 23: Hunters encountered during ESMF study in Nyimur areas**

#### 2.2.4.2.8 FISHERIES

Lamwo District does not have large water bodies like lakes, where fishing can be carried out. However, there are perennial and seasonal rivers and streams that serve as habitats for a variety of fish. Major fish types in the area include: *Tilapia spp.*, *Clarias mozambica* and the mirror carp, Catfish, lungfish and many others. Traditionally, the local communities harvest these wild fish from the rivers and streams using traditional fishing methods and gears that are not sustainable and therefore not able to meet the ever-growing demand for fish food. Fish is on high demand in Lamwo District. Scanty fishing is also carried out in Palabek Ogili where there is a dam known as Lalee dam which is used as a fishing hub for the district. Fish farming is being encouraged but few people have embraced creation of fish ponds.

#### 2.2.4.2.9 SANITATION AND HYGIENE

Sanitation and hygiene is very poor in the whole of Ogili sub county and thus in the area around Nyimur river. The latrine coverage of Ogili Sub County was 35.6% in 2016, while handwashing facilities were present in only 5.6% of the households<sup>4</sup>. Lamwo district in itself has 12 public toilet facilities. The district sanitation coverage is 42%. The sanitation related challenges in Ogili Sub County include poor human waste disposal /open defecation, dirty water poor hygiene, flooding of latrines, dirty compounds and far away water sources. All these problems can be addressed, given closer water facilities and improvements in knowledge and practice of good sanitation. Some will need improved technical design to accommodate some challenges e.g. the latrines and flooding. The area has very low toilet coverage with most homesteads having dilapidated toilets that are mud walled and grass thatched. Most people use the bushes around their homes as toilet facilities. In most cases, the communities in the project area have poorly constructed pit latrines made of mud and wattle (Figure 24).



**Figure 24: Pit latrine in rural areas of Palabek in Lamwo**

#### 2.2.4.2.10 COMMON DISEASES

The most common diseases in the area include; malaria, diarrhoea and common colds/ cough. Malaria is reportedly a very serious problem accounting for about 34.5% of the respondents had malaria in the course of the year while 29.5% had flu or cough and 13.5% had diarrhoea. Malaria is thus the most

prevalent disease in the area and action must be taken not to escalate it but improve its prevention and management. Indoor residual sprays were done but there is development of resistance to the pesticides by the mosquitoes. Diarrhoea; can be attributed to unsanitary conditions, poor hygiene is reportedly common due to lack of toilets accompanied by their poor usage and scarcity of clean and safe drinking water. Nodding disease is still a mystery disease which has devastated many families. It has affected many children in the area though recent research indicates it could be linked to the river fly; thus, the project will need to address issues of vector control.

#### 2.2.4.2.11 GROWING NUMBERS OF REFUGEES AND INTERNALLY DISPLACED PERSONS-IDPS

Refugees is an evident environmental and social challenge in Lamwo District (Figure 25). Their continued concentration in the area leads to, and compounds various environmental problems. The conflict in South Sudan has continued to displace communities into Uganda. The official registered numbers are 5,471; while those who were not registered were reportedly over 20,005. The IDPs have also cattle, sheep and goats which is causing rapid environmental degradation through cutting of trees for charcoal and firewood.

At the moment, there is latent tension and latent conflict between the host communities and the refugees. The environmental and social costs of this displacement in the whole project area includes;

- a. Overcrowding and congestion in the camps,
- b. Poor sanitation,
- c. Poor social services and overstretched social infrastructure,
- b. High demand for fuel and depletion of tree cover,
- a. Social tensions between the refugee/IDP and host communities and poor food security access to food.



**Figure 25: Refugees waiting for food rations in the areas Palabek Ogili Refugee Settlement in Lamwo**

#### 2.2.5 STATE OF INFRASTRUCTURE

Poor tracks of roads with gaping holes were noted in the project area and this makes the roads vulnerable to soil erosion once it rains. The main means of transport in the area is by foot accounting for to 46% of the households. Access to is largely through foot paths which are not easily motorable (Figure 26).



Figure 26: State of the roads in the project areas in Nyimur

2.3 MATANDA/ENENGO PROPOSED PROJECT SITE

2.3.1 LOCATION

This site for Matanda/Enengo irrigation development project is to be located in Matanda village (Figure 27), Kibimbi Parish, Kihihi Sub-county and is projected to supply water to the Villages of Matanda, Rushoroza, Kayemba, Kabuga, Bugongi and other surrounding areas totaling up to 800acres.

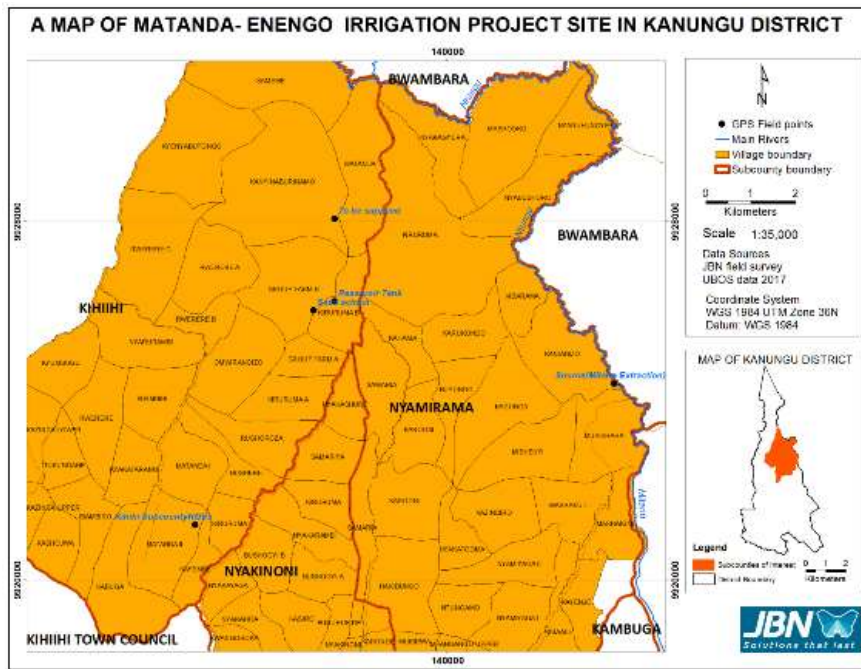


Figure 27: Location of the Matanda Project Site

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## 2.3.2 PHYSICAL ENVIRONMENT

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### 2.3.2.1 TOPOGRAPHY

The project area lies in the fringes of the western East African rift valley with undulating plains and flat-topped hills. Neighboring villages and areas form of flat topped hills with gentle sloping sides and broad valleys. These hills gradually increase in height to the highlands of 2,503m above sea level being the highest peak and the lowlands go to 1,000m a.m.s.l.

### 2.3.2.2 CLIMATE

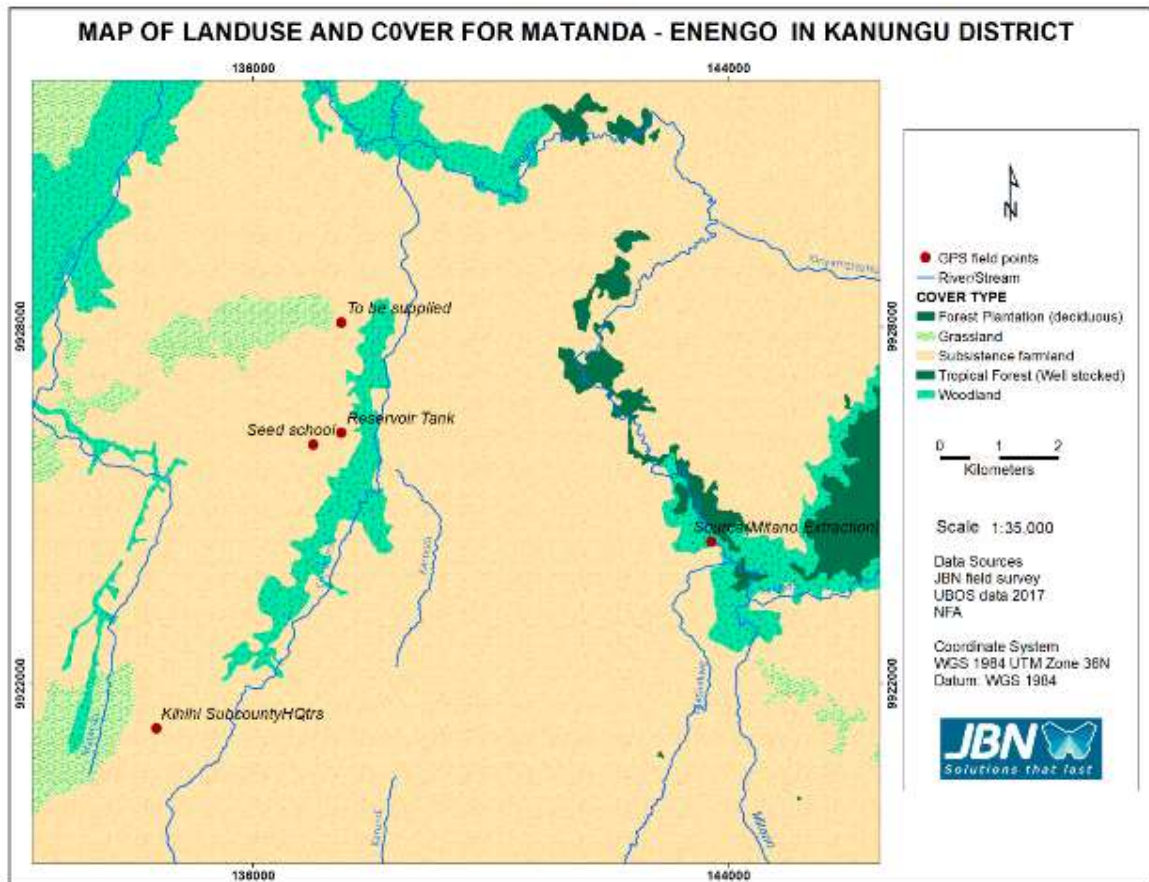
The project area exhibits a tropical type of climate receiving moderate and fairly well distributed annual rainfall of about 1200mm. The District receives a bimodal type of rainfall between the months of March–May and September–December. The rest of the months are dry with temperatures ranging from 15°C to 20°C on average, KDLGSR 2015/16.

### 2.3.2.3 SOILS AND GEOLOGY

The most common types of soils in the area are greyish brown sandy loams and reddish-brown sand especially in Kihikihi and Nyamirama sub-counties. Because these soils are very fertile, they have been deeply cultivated to provide livelihood to the settling communities causing a decline in soil fertility. A number of human factors have contributed to land degradation in the area, these include; poor farming practices that lead to soil erosion, deforestation, wetland reclamation, land fragmentation, population pressure and inability of smallholder farmers to invest in sustainable land management practices.

### 2.3.2.4 VEGETATION

The catchment area is comprised of modified natural vegetation mostly converted into small and big scale farmland leaving a small percentage of native vegetation is remaining (Figure 28). Farmlands are planted with crops such as maize, groundnuts, cassava, sorghum, rice, beans, sweet potatoes, Irish and sugar cane, vegetables especially tomatoes, cabbages and pepper. It is worth noting that production of water melon, mangoes and Jack fruit is a common practice. Higher plant resources in the area include common tree species of; *Eucalyptus grandis*, *Pinus caribea*, *Markharmia lutea*, patches of *Erythrina abyssinica* and fruit trees of oranges, mangoes and Jack fruit.



**Figure 28: Land use types in Kihhi Sub-County**

### 2.3.2.5 HYDROLOGY

Generally, there are numerous water surface bodies inform of small streams and rivers, these include; Ishasha, Nchwera, Kiruruma, Birara and R. Mitano which drains into L. Edward. L. Edward is the main source of fish in the besides fishponds. The district is also endowed with a number of wetlands both seasonal and permanent, which serve as water reservoirs and other ecological factions. R. Mitano will provide the water for the irrigation.

## 2.3.3 SOCIO-ECONOMIC ENVIRONMENT

### 2.3.3.1 POPULATION

According to National Housing Population Census of 2014, Kanungu District has a total population of 252,075 people, of these Males total up to 120,361 and females are 131,714. 51,694 are urban dwellers leaving a total of 200,381 rural populations. The district boasts of 250,324 total households and 1,751 non-households. Currently the population density stands at 207.2/km<sup>2</sup> compared to 2002 when the population density was at 164 persons per sq.km of land.

### 2.3.3.2 ETHNICITY

The project area is inhabited by many legally recognized ethnic groups of people with the majority being Bakiga who account for more than 88 per cent yet the indigenous people are Bahororo.

#### 2.3.3.3 MAJOR LIVELIHOOD

As earlier noted, agriculture is the leading economic activity practiced in the area. 96.9% of the people are involved in crop production compared to 3.1% involved in other activities like livestock rearing, poultry and fishing with land under agriculture is about 60.8%. About half of the total household members are involved in subsistence farming where by food is grown for home consumption and the surplus is sold others practice zero grazing as well (Figure 29).



**Figure 29: Zero grazing done by some farmers.**

Kanungu district hosts two protected areas viz; Bwindi Impenetrable world heritage in the west and Queen Elizabeth, Biosphere reserve in the North. These are areas of great diversity and provide a habitat of the endemic mountain gorilla and the highly vulnerable climbing lions respectively.



### 3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

#### 3.1 POLICY FRAMEWORK

##### 3.1.1 THE NATIONAL ENVIRONMENT MANAGEMENT POLICY 1994 (NEMP)

The key policy objectives include the enhancement of the health and quality of life of Ugandans and promotion of long-term, sustainable socio-economic development through sound environmental and natural resource management and use; and optimizing resource use and achieving a sustainable level of resource consumption. ***With regard to IDCRP, aspects of Environmental Assessment have been integrated into the project with the objective of ensuring sustainability in the project.***

##### 3.1.2 NATIONAL WATER POLICY, 1999

The National Water Policy promotes a new integrated approach to manage the water resources in ways that are sustainable and most beneficial to the people of Uganda. The policy is intended to promote amongst others, integrated and sustainable, development, management and use of the national water resources with the full participation of all stakeholders. In addition, the policy equally looks into the development and efficient use of water in agriculture in order to increase productivity and mitigate effects of adverse climatic variations on rain-fed agriculture, with full participation, ownership and management responsibility of users. ***The preparation of this ESMF is premised on the need to ensure that, the project is sustainable in its usage of water as well as full participation of the stakeholders.***

##### 3.1.3 NATIONAL DEVELOPMENT PLAN

Under the Second National Development plan (NDPII) which covers the period 2015/16 to 2019/20, agriculture is one of its three prioritized areas. Specifically, the Plan Water for Production is defined to include provision of water infrastructure for irrigation, livestock, fishing, mining, wildlife, industries, aquaculture, maintaining the environment and ecosystem. Furthermore, the Plan recognizes that, only 2% of water is used for production with only 1% of potential irrigable area, where 15,000ha out of 3,030,000ha is under formal irrigation. Access to water for livestock at present is estimated at 48.8%. The country is increasingly facing a major challenge of prolonged droughts and unexpected floods due to climatic change and variability and is predicted to be water stressed by 2025. ***Therefore, to address this challenge, and in order to promote commercial agriculture, Government will sustainably use water resources for irrigation, livestock and aqua-culture. Bulk water transfer systems will be built to cover long distances and large areas to provide water for multi-purpose use. To mitigate shortages at local level large and medium water reservoirs will be developed. Government will construct large- and small-scale irrigation schemes to increase water for production.***

##### 3.1.4 NATIONAL IRRIGATION MASTER PLAN FOR UGANDA (2010-2035)

The Overall Objective of irrigation development in Uganda, in line with the NDP is therefore: *“Poverty Alleviation and Economic Growth as a result of the sustainable realization of the country’s irrigation potential mitigating the effects of climate change and contributing to the transformation of Uganda society from a peasant to a modern and prosperous country”*. Under the Plan, irrigation will present the following benefits:

- a. it will reduce the risk of climate shock (drought and flood) and allows adaptation against climate change and hence not only renders risk averse farmers willing to invest in seasonal inputs and longer-

term productivity and sustainability measures, it also reduces the perceived risks of farming system diversification;

- b. it increases productivity and can increase quality of crops;
- c. subject to certain caveats, publicly funded irrigation has significant poverty alleviation potential; and
- d. Appropriate irrigation development planning, by facilitating intensified production, can reduce the unit costs of input, extension and post-harvest services.

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### 3.1.5 AGRICULTURE SECTOR STRATEGIC PLAN (ASSP)

The development of the agriculture sector is expected to contribute to national wealth creation and increased employment along the agricultural value chains in a sustainable manner. ASSP recognizes the need to increase access to water for agricultural production as one of its key priority interventions to ensure attainment of GoU aspiration of attaining food security at household levels. This is based on existence of significant potential in Uganda to harness available water for increased agricultural production and productivity. The Plan notes that, for now, only 40% of its irrigable area and 1/3 of the 66 km of total renewable water resources in Uganda is utilized. In addition, the aggregate WfAP storage capacity meets only 2.32% of the total demand (499 million m<sup>3</sup>) for livestock, irrigation, fish farming and rural industry. **Therefore, this strategic action is set to: promote positive attitudinal change towards irrigation and conservation agriculture; increase demand for irrigation services and WfAP infrastructure such as water reservoirs which is all consistent with the planned IDCRP by MWE.**

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### 3.1.6 NATIONAL AGRICULTURAL POLICY (NAP) 2013

The vision of the NAP is “a Competitive, Profitable and Sustainable Agricultural Sector” and the mission being “to transform subsistence farming to sustainable commercial agriculture.” The overall objective of the agriculture policy is to achieve food and nutrition security and improve household incomes through coordinated interventions that focus on enhancing sustainable agricultural productivity and value addition; providing employment opportunities and promoting domestic and international trade. **It is evident that, the NAP aspirations will be achieved through interventions planned under the planned IDCRP especially aspects of increased food security and household incomes.**

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### 3.1.7 THE NATIONAL LAND USE POLICY

The overall policy goal is to achieve sustainable and equitable socio-economic development through optimal land management and utilization in Uganda. **IDCRP took into consideration the provisions of this policy by restricting its operations to schools and farmers who have their own land.**

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### 3.1.8 CLIMATE CHANGE POLICY (NCCP)

The Climate Change Policy aims at *ensuring a harmonized and coordinated approach towards a climate-resilient and low-carbon development path for sustainable development in Uganda*. It focuses on providing direction for the key sectors being affected by the impacts of climate change; facilitating adaptation and strengthening coordinated efforts amongst sectors towards building an overarching national development process that is more resilient. The policy also provides a framework for ensuring coordinated action, with adequate attention paid to capacity development and climate financing mechanisms. The policy’s key pillars are adaptation, mitigation, and research and observation, with adaptation emphasized as a primary priority and mitigation as secondary.

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### 3.1.9 THE NATIONAL GENDER POLICY, 1997

The government adopted a National Gender Policy of 1997, a tool to guide and direct the planning, resource allocation and implementation of development programs with a gender perspective. The adoption of the gender policy has facilitated Uganda's gender mainstreaming programs in all sectors of the economy (implying, the planned works project should equally integrate gender into the implementation of works. ***IDCRP will mainstream gender dimensions into its formulation, planning and implementation framework hence, its compliance with the National Gender Policy for Uganda.***

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#### 3.1.10 OPERATION WEALTH CREATION

The GoU acknowledge that agriculture has, for a long time, been a core sector of the economy providing the basis for growth in other sectors and significantly contributing to GDP and employment. Under Operation Wealth Creation (OWC), it is the objective of GoU that national policies, interventions and programmes aim at transforming agriculture from subsistence to commercial agriculture with a target of raising household incomes to a minimum UGX20 million per household per year. ***IDCRP will at the grassroots be implemented in close alignment with the OWC especially when it comes to working with farmers.***

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### 3.2 LEGAL FRAMEWORK

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#### 3.2.1 CONSTITUTION OF THE REPUBLIC OF UGANDA, 1995

The right to a clean and healthy environment is enshrined in Article 39 of the Constitution of Uganda, 1995. ***To ensure IDCRP compliance with the Constitutional obligations on sustainability, an ESMF has been prepared which outlines mechanisms for environment assessment and mitigation measures included therein.***

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#### 3.2.2 THE NATIONAL ENVIRONMENT ACT, CAP 153

Section 20 of the Act makes it a legal requirement for every developer to undertake an environmental assessment for projects listed in the Third Schedule of the Act. In this case, agriculture amongst others, including large scale agriculture, use of new pesticides are some of the projects in the Third Schedule to the Act that require an ESIA to be conducted before they are implemented. ***ESMF outlines some of the salient impacts in IDCRP as well as mechanisms for conducting further assessments on the project sub-components.***

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#### 3.2.3 WATER ACT CAP 152

Of relevance to the planned project, the Act allows for the orderly development and use of water resources for purposes other than domestic use, such as the watering of stock, irrigation and agriculture and fishing. In addition, Section 18 of the Act stipulates that, no person shall construct or operate any works unless authorised to do so under this Act and as such, a person wishing to construct any works or to take and use water may apply to the director in the prescribed form for a permit to do so unless exempted by Minister.

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#### 3.2.4 THE OCCUPATIONAL SAFETY AND HEALTH ACT, 2006

The Act provides for the prevention and protection of persons at all workplaces from injuries, diseases, death and damage to property. ***The ESMF provides for provision of safety gear for workers during implementation of IDCRP activities.***

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### 3.2.5 LAND ACT, CAP 227

The Land Act vests land ownership in Uganda in the hands of Ugandans and that, whoever owns or occupies land shall manage and utilize the land in accordance with the Forest Act, Mining Act, National Environment Act, the Water Act, the Uganda Wildlife Act and any other law [section 43, Land Act]. **The planned IDCRP has integrated Environmental Assessments in its ESMF in compliance with the Act provisions.**

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### 3.2.1 THE EMPLOYMENT ACT, 2006

This Act spells out general principles regarding forced labor, discrimination in employment, sexual harassment and provisions to settle grievances. It further provides that, a child under the age of twelve years shall not be employed in any business, undertaking or workplace. **No doubt, this law will oblige the project to ensure no employment of children below the age of 18 years in the project activities.**

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### 3.2.2 THE PUBLIC HEALTH ACT, 1964

Section 7 of the Act provides local authorities with administrative powers to take all lawful, necessary and reasonable practical measures for preventing the occurrence of, or for dealing with any outbreak or prevalence of any infectious, communicable or preventable disease to safeguard and promote public health; and to exercise the powers and perform the duties in respect of public health conferred or imposed by this Act or other relevant laws. **Public health and hygiene are key in the implementation with regard to waste management arising from agro-chemicals use, including use of pesticides.**

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### 3.2.3 ENVIRONMENTAL IMPACTS ASSESSMENT REGULATIONS, 1998

The EIA Regulations gives a systematic EIA procedure in Uganda. It gives EIA a legal mandate, thus paving the way for an enabling environment for it to use as a tool for environmental protection. The regulation also has punitive measures of offenders. It recognizes three levels of EIA:

- a. An environment impact review shall be required for small scale activities that may have significant impact;
- b. Environmental impact evaluation for activities that are likely to have significant impacts; and
- c. Environmental impact study for activities that will have significant impacts.

**In all, issues of EIA are being addressed in the project in line with these Regulations.**

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### 3.2.4 NATIONAL ENVIRONMENT (WASTE MANAGEMENT) REGULATIONS, 1999

The National Environment (Waste Management) Regulations, 1999 apply to all categories of hazardous and non-hazardous waste and to the storage and disposal of hazardous waste and its movement into and out of Uganda. The regulations promote cleaner production methods and require a facility to minimize waste generation by eliminating use of toxic raw materials; reducing toxic emissions and wastes; and recovering and reuse of waste wherever possible. **The Regulations oblige the Developer to put in place measures for proper management of waste and of which basic guidance on handling and disposal of any waste arising from the use of pesticides has been provided in the ESMF.**

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## 3.3 RELATED INTERNATIONAL CONVENTIONS, AGREEMENTS AND GUIDELINES/INSTRUMENTS

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### 3.3.1 BASEL CONVENTION

The Basel Convention on the Control of Trans-Boundary Movements of Hazardous Wastes and Their Disposal was concluded in Basel, Switzerland, on March 22, 1989, and entered into force in May 1992.

Now ratified by 149 countries including 32 of the 53 African countries, the focus of this convention is to control the movement of hazardous wastes, ensure their environmentally sound management and disposal, and prevent illegal waste trafficking (UNEP, 2006). The parties to this convention recognize the serious problems posed by stockpiles of unused and unwanted chemical products which, as a result of their obsolescence, are now considered wastes. At a ministerial-level meeting held in Rabat, Morocco, in January 2001, African countries declared their intent to work with other interested parties from all sectors of civil society to rid all 53 countries of Africa of these stockpiled wastes over the next 10 years. **Therefore, any efforts to export obsolete pesticides in IDCRP for disposal have to be in line with the Basel Convention.**

### 3.3.2 ROTTERDAM CONVENTION

The Rotterdam Convention aims to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use. Governments began to address the problem of toxic pesticides and other hazardous chemicals in the 1980s by establishing a voluntary Prior Informed Consent procedure (PIC). PIC required exporters trading in a list of hazardous substances to obtain the prior informed consent of importers before proceeding with the trade. The convention establishes a first line of defense by giving importing countries the tools and information they need to identify potential hazards and exclude chemicals they cannot manage safely. When a country agrees to import chemicals, the convention promotes their safe use through labeling standards, technical assistance, and other forms of support. **Implementation of IDCRP will observe these provisions when importing agro-chemicals.**

### 3.3.3 THE SAFETY AND HEALTH IN AGRICULTURE CONVENTION

The Safety and Health in Agriculture Convention (Convention 184) adopted by the conference of the International Labor Organization (ILO) addresses the protection of workers in the agricultural sector. In addition, more children work in agriculture than in any other sector and they are differently and particularly vulnerable to the toxic effects of chemicals such as pesticides. **Application of the Convention is an important step in improving the health and safety of the workers in a project as such; there will be need to ensure workers in the project are provided with appropriate PPEs during project implementation.**

## 3.4 WORLD BANK SAFEGUARD POLICIES

The Project is rated as a category A type and triggers the policies as summarized on Table 3 below: `

**Table 4: Summary of WB safeguards polices in relation to the project**

Safeguard Policies	Triggered?		Remarks
	Yes	No	
OP 4.01 Environmental Assessment	√		The project component dealing with <i>Irrigation Infrastructure Development and integrated catchment management as well as watering troughs and fisheries developments, access routes and construction of office blocks and sanitation facilities all trigger this policy. Other activities such as value addition facilities will equally trigger this policy. The ESMF will guide screening for any required environmental and social assessment, including development of ESMP, during implementation.</i>

OP 4.04 Natural Habitats	√		The project component of Irrigation Infrastructure Development is likely to be developed in wetland areas as such; the project is likely to have impacts on natural habitats hence, triggering this safeguards policy. Likely project impacts on Natural Habitats shall be assessed as part of site-specific ESIA and ESMPs.
OP 4.09 Pest Management	√		Under Component 1, it is noted that, amongst others, there will be promotion of climate SMART conservation farming and provision of basic input packages as well as seedling production and crop intensification which will likely trigger this policy hence, it necessitated preparation of a Pesticides Management Plan alongside this ESMF (see Annex 7).
OP 4.10 Indigenous People		X	This safeguard policy will not be triggered because project sites are not known to have any indigenous peoples.
OP 4.11 Physical Cultural Resources	√		This safeguard is triggered because project components are likely to involve infrastructure developments with civil works and excavations which may occasion accidental discoveries of PCRs. Therefore, a Chance Finds Procedure has been prepared as part of this ESMF (Annex 5).
OP 4.12 Involuntary Resettlement	√		The project works involving construction of irrigation infrastructures will likely trigger land-take issues where by triggering this safeguards policy and a separate Resettlement Policy Framework (RPF) has been prepared alongside this ESMF to address any land take issues which might arise during project implementation.
OP 7.50 Projects on international waters	√		Nyimir extends to South Sudan, whereas the Kabuyanda one flows into R. Kagera which feeds into Rwanda, and the Amagoro one is shared with Kenya. Riparian notification has been undertaken by GoU through Nile Basin Initiative on Nov. 13, 2018. No response and/or objection has been received. The following Riparian States were notified: Burundi, DR-Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, and Tanzania.
OP 4.36 Forests	√		The project activities under the Sustainable Land Management sub-component and natural resources management activities may involve tree planting and afforestation which are likely to trigger this policy. Forest impacts and management shall be included in the site-specific ESIA and/or ESMPs developed during implementation, in close collaboration with NFA and the respective District Local Governments.
OP 4.37 Safety of Dams	√		The project envisages to put in place, large dams which trigger dams safety since some of the planned dams will be 26m high thereby triggering this policy and also the project being a category A type. In addition, the project will include excavation activities for its construction materials which will be accompanied with major topographical and land-cover changes making safety considerations essential triggering the policy. In all, there will be a host of OHS hazards that can occur during the operational phase of construction materials extraction projects.
OP/BP 7.60 Projects in Disputed areas		X	IDCRP activities will not be implemented in disputed areas; hence this safeguards policy is not triggered.

### 3.4.1 WORLD BANK GROUP ENVIRONMENTAL, HEALTH, AND SAFETY GENERAL GUIDELINES

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). Effective management of environmental, health, and safety (EHS) issues entails the inclusion of EHS considerations into corporate and facility-level business processes in an organized, hierarchical approach that includes mechanisms for identifying EHS project hazards and associated risks as early as possible in the facility development or project cycle, including the incorporation of EHS considerations into the site selection process, product design process, engineering planning process for capital requests, engineering work orders, facility modification authorizations, or layout and process change plans.

#### 3.4.1.1 ENVIRONMENTAL, HEALTH, AND SAFETY GUIDELINES FOR CONSTRUCTION MATERIALS EXTRACTION

This document includes information relevant to construction materials extraction activities such as aggregates, limestone, sand, gravel, and clay amongst others. It addresses stand-alone projects and extraction activities supporting construction, civil works, and cement projects. Although the construction materials extraction guidelines emphasize major and complex extraction schemes, the concepts are also applicable to small operations.

Some of the key concepts covered under these Guidelines include:

- a. *Environment*: Environmental issues during the operational, construction, and decommissioning phases of construction materials extraction primarily include aspects such as air emissions, noise and vibrations, water, waste and land conversion;
- b. *Occupational Health and Safety* hazards likely to occur during the operational phase of construction materials extraction projects which primarily include; respiratory hazards, noise and physical hazards; and
- c. *Community Health and Safety* issues relating to construction, operation, and decommissioning mainly focus on land instability, water and explosives safety and aspects of decommissioning at the end of the project.

These have been taken into account during the preparation of the ESMF with the objective of ensuring project compliance with these provisions. The same shall be referred to during preparation of site-specific ESIA's and ESMPs during project implementation phase.

#### 3.4.1.2 ENVIRONMENTAL, HEALTH, AND SAFETY GUIDELINES FOR ANNUAL CROP PRODUCTION

These EHS Guidelines provides a summary of EHS issues associated with annual crop production, along with recommendations for their management. Additional guidance on EHS issues that may be common across industry sectors is presented in the General EHS Guidelines.

The Guidelines contain performance levels and measures that are generally considered to be achievable in crop production areas by existing technologies at reasonable costs. Application of the EHS Guidelines to existing farming systems may involve the establishment of site-specific targets, with appropriate timetable for achieving them. They provide information relevant to large-scale production, harvesting, post harvesting processing and storage of major annual crops, including cereals, pulses, roots and tubers,

oil-bearing crops, fiber crops, vegetables, and fodder crops, located in different geographical settings. However, they do not include processing of raw materials into semi-finished and finished products.

Key aspects taken into considerations during the preparation of this ESMF Include;

- a) *Environmental* issues encompassing; soil conservation and management, nutrient management, crop residue and general solid waste management, water management and aspects of pest management have been captured in the ESMF amongst others;
- b) *Occupational Health and Safety risks* are key in these Guidelines as such, the ESMF has integrated OHS aspects into its preparation and such measures will be part of the implementation agenda for the project.;
- c) *Community Health and Safety* issues relating to change in land use, degradation, vulnerability, and exposure to hazardous products.

### 3.5 GAP ANALYSIS BETWEEN KEY WORLD BANK SAFEGUARDS POLICIES AND GOVERNMENT OF UGANDA'S SAFEGUARDS POLICIES REQUIREMENTS

It is worth noting that environmental management in Uganda has been largely supported by the World Bank, right from the development of the National Environment Management Policy in 1994, the National Environment Act in 1995 and the accompanying Regulations. Owing to this, most of the environmental requirements are largely influenced by the World Bank's Environmental and Social Safeguard Policies. Most of the provisions of OP 4.01 were adopted and as such the screening and assessment methodology is virtually the same as seen in the Uganda's EIA Guidelines of 1997.

However, some of the differences include the following:

- a. The Ugandan Laws do not provide for Framework Approach (ESMF and RPF) but rather only, specific instruments (ESIA, ESMP, Environmental Audits). This ESMF prepared for IDCRP in line with OP 4.01 will guide the preparation of the specific instruments;
- b. Independent Review is not specifically provided for under EIA Regulations of Uganda and as a result the review of ESIA's is commonly reviewed by government agencies, and Category A projects subjected to Public Hearing (Disclosure), whereas the OP 4.01 provides for Panel of Experts to for Category A type projects with Complex issues such as Dam Safety Panel;
- c. Under OP 4.04 Natural Habitats, Uganda lacks Regulations to implement the National Forestry and Tree Planting Act and the Wildlife Act. Therefore, OP 4.04 on Natural Habitats and OP 4.36 on Forests shall be used to assess any impacts on natural habitats.
- d. Health and Safety: Issues of occupational health and safety are spelt out clearly in related Acts such as Occupational Act 2006, the The Environmental Health and Safety, including all issues related with labour influx and sexual harassment are explicitly included in the OP/BP 4.01, as part of the environmental and social management. The specific references are included in the WBG Environmental, Health and Safety Guidelines (EHSG) for Crop production and Construction Materials Extraction Guidelines containing the performance levels and measures that are normally acceptable and that are generally considered to be achievable in new facilities at reasonable costs by existing technology; and
- e. On OP 4.11 Physical Cultural Resources, the Ugandan legal framework is limited in scope. For example, it does not cover certain aspects such as the intangible heritage.

These are some of the salient environmental gaps between the Environmental Safeguard Policies and the Government of Uganda Environmental requirements specifically on the levels of details required during the consultative process during ESIA i.e. prior informing the persons to be consulted, providing



details of programs of consultations, records of meetings amongst others. These are explicitly required by the Bank as compared by the national level. However, where such gaps exist, the World Bank Safeguard Policies shall take precedence especially on matters of preparation, review and approval of instruments developed during the implementation of the ESMF.

The other area is under OP 4.12 (Involuntary Resettlement) whereby Uganda's Land Act legal framework is restricted to fair, adequate and prompt compensation (cash), while the World Bank policy requires the need to provide alternative land, resettling the Project Affected Persons (PAPs) to levels or standards of livelihood similar to or better than before compensation. The Ugandan legislation also does not provide for restoration of livelihoods, resettlement assistance and compensation at replacement value. Under circumstances like these regarding short-comings in the Uganda law on compensation process, the provisions of OP 4.12 shall be applied.

The existing gaps are summarized in the Table 4 below:

**Table 5: Summary of Gap Analysis between Uganda and World Bank Safeguards<sup>9</sup>**

World Bank's Safeguard Policies	Uganda's Legal and Regulatory Framework	Gaps identified in Uganda legal and regulatory framework
Environmental Assessment (OP 4.01)	<ul style="list-style-type: none"> <li>• National Environment Management Policy, 2014</li> <li>• National Environment Act Cap 153</li> <li>• EIA Regulations, 1998</li> </ul>	<ul style="list-style-type: none"> <li>a. The Bank's classification and use of project categories i.e. A, B and C for a high, moderate and low potential environmental and social impacts. At the national level, projects are listed according to sectors and based on intensity of their impacts which is a key gap in the national law.</li> <li>b. Independent review is not specifically provided for under EIA Regulations of Uganda and as a result, the review of EIAs is commonly reviewed by government agencies.</li> <li>c. In the EIA review process; there is no specific legal/regulatory framework that caters for examination of the quality of the EIA reports. Only conditions of approval/reasons for non-approval of EIAs are provided by NEMA;</li> <li>d. There are no set out administrative mechanisms for appealing a decision taken on a particular EIA.</li> </ul>
<p>There is an on-going process to amend the National Environment Act and EIA Regulations, and Strategic Environmental Assessment Guidelines and Uganda Association for Impact Assessment Bill have been drafted and the proposed amendments in the National Environment Act are to cover the following:</p> <ul style="list-style-type: none"> <li>a. Technical committee on environmental assessment;</li> <li>b. Strategic Environment Assessment;</li> <li>c. Basis for environmental impact assessment and environmental risk assessment;</li> <li>d. Projects for which project briefs are required;</li> <li>e. Measures on climate change impacts; and</li> <li>f. Establishment and composition of the environmental tribunal.</li> </ul>		

<sup>9</sup> Source: ESMF for Integrated Water Management and Development Project MWE March, 2018

Natural Habitats (OP 4.04) and Forests (OP 4.36)	<ul style="list-style-type: none"> <li>a. The Constitution of the Republic of Uganda 1995;</li> <li>b. The National Environment Act Cap 153;</li> <li>c. The National Forestry and Tree Planting Act, 2003;</li> <li>d. The Uganda Wildlife Act Cap 200;</li> <li>e. The Land Act Cap 227;</li> <li>f. The Fish Act Cap 197.</li> </ul>	There are general gaps which include lack of Regulations to implement the National Forestry and Tree Planting as well as the Wildlife Acts.
Physical Cultural Resources (OP 4.11)	<ul style="list-style-type: none"> <li>a. The Constitution of Uganda.</li> <li>b. The National Environment Act, Cap 153</li> <li>c. The Historical Monuments Act, Cap 46</li> <li>d. The Institution of Traditional or Cultural Leaders Act, 2011</li> </ul>	<ul style="list-style-type: none"> <li>a. The legal framework does not cover some aspects such as intangible heritage;</li> <li>b. The sites and monuments are not adequately maintained, documented and in addition, some of the antiquities are not collected;</li> <li>c. There is limited enforcement of the legal framework related to PCRs in Uganda because most developers and government officials do not understand the importance of conserving physical cultural resources.</li> </ul>
<p>The Historical Monuments Act is being reviewed to provide for an efficient law for the protection of the CRs in the country. The new law shall be inclusive of all aspects of culture, the tangible, intangible heritage of the country. The revised EIA Regulations provide that risk assessment should include risks to cultural heritage.</p>		

## 4 ENVIRONMENTAL SCREENING AND ENVIRONMENTAL ASSESSMENT

Principally, Environmental Screening is intended to ensure that, proposed projects are subjected to appropriate extent and type of environmental assessment (EA). The classification of each IDCRP subproject under the appropriate environmental category will be based on the provisions of the World Bank Operational Policy on Environmental Assessment (OP 4.01). The environmental and social screening of each proposed sub-project will result in its classification in one of the three Environmental Assessment Categories - A, B or C, depending on the **type, location, sensitivity, scale of the subproject, the nature** and the **magnitude** of its potential environmental and social impacts.

### 4.1 CRITERIA FOR CLASSIFYING PROJECT

As per the Banks safeguards policies<sup>10</sup>, projects are placed under categories based on the following considerations:

#### 4.1.1 PROJECT TYPE AND SCALE

The Bank lists and places projects into categories based upon prior Bank and international experience and such lists provide a good starting point and framework usually for the screening decision. The project type involves understanding the type of the project, nature of project activities and extent of impacts from such project(s).

#### 4.1.2 PROJECT LOCATION

The significance of potential impacts is partly a function of the natural and socio-cultural settings for the project. The location considerations for instance for placing the project in either of the categories include being:

- a. in or near sensitive and valuable ecosystems such as wetlands or in habitats for endangered species;
- b. in or near areas with archaeological and/or historical significance;
- c. in densely populated areas, where resettlement may be required, or potential pollution impacts and other disturbances are likely to significantly affect communities;
- d. in regions subject to heavy development activities or where there are conflicts in natural resource allocation;
- e. along watercourses or in reservoir catchments which are sources of water for the communities; and
- f. on lands or waters containing valuable resources (such as fisheries, medicinal plants, prime agricultural soils).

#### 4.1.3 SENSITIVITY OF ISSUES

The project may involve activities or environmental features that may cause adverse/ irreversible impacts and such issues may include and may not be limited to disturbance of tropical forests, conversion of wetlands, impacts on protected areas or sites, lands on which are indigenous peoples or other minority groups, involuntary resettlement or impacts of trans boundary nature amongst others or toxic waste disposal. Therefore, under such circumstances, such projects are placed under Category A type and the level of effort needed to assess their anticipated impacts will be of higher order adequate in terms of analytical, decision-making, coordination, and public involvement.

#### 4.1.4 NATURE OF IMPACTS

Naturally, it is difficult to consider nature of impacts without having some overlap with the concepts of sensitivity and project type. The nature of impacts assessment should take into consideration the aspects below under which, projects in Category A are typified:

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<sup>10</sup> *World Bank Environmental Assessment UPDATE of April 1993 N°.3*

- a. Irreversible destruction or degradation of natural habitat and/or loss of biodiversity or environmental services provided by a natural system;
- b. risk to human health or safety (from generation, storage or disposal of hazardous wastes); and
- c. Absence of effective mitigation or compensatory measures.

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#### 4.1.5 MAGNITUDE OF IMPACTS

Magnitude of impacts can be gauged as absolute taking into account, the amount of a resource affected relative to the existing stock of such a resource or ecosystem as well as the intensity of the impact and its timing and duration. In addition, the probability of occurrence for a specific impact and the cumulative impact of the proposed action and other planned or ongoing actions may equally be considered. For example, the resettlement of 5,000 families is a large impact, in absolute terms.

### 4.2 PROJECT CATEGORIZATION BASED WORLD BANK SAFEGUARDS

The World Bank places projects into categories **A, B and C** and each of these project categories will require a specific level of Environment Assessment taking into account considerations outlined under section 7.1 above as follows:

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#### 4.2.1 CATEGORY A PROJECTS

Category A projects are those which are likely to have adverse impacts with one or more of the attributes that make their potential impacts *significant* such as direct pollutant discharges that are large enough to cause degradation of air, water or soil; large-scale physical disturbance of the site and/or surroundings; extraction, consumption, or conversion of substantial portions of forest and other natural resources; measurable modification of hydrologic cycle; hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances.

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#### 4.2.2 CATEGORY B PROJECTS

Any project which is likely to have potential environmental and social impacts, which are less adverse than those of EA Category A projects, on human populations or environmentally important areas including wetlands, forests, grasslands and any other natural habitat. The impacts are usually site specific, few or none of them are irreversible, and most of them are mitigated more readily than impacts from EA Category-A sub projects. **Although an ESIA is not always required, some environmental analysis is necessary. Such subprojects would require an ESMP. Given the nature of project components under IDCRP project, most of the activities fall under this EA Category B and will require preparation of an ESMP.**

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#### 4.2.3 CATEGORY C PROJECTS

Any project which is likely to have minimal or no adverse environmental and social impacts. Beyond screening no further ESIA action is required. No assessment would be required under World Bank requirements.

### 4.3 CATEGORIZATION OF IDCRP PROJECT

The proposed IDCRP has been screened against above provisions taking into account the following:  
Due to the multipurpose nature of the planned investments, the irrigation facilities are envisaged to include dams above 15m, which are considered as large, supporting crop production, livestock watering, fisheries, and hydropower generation. Their design and construction will require specialized considerations to handle for instance, flooding risks. The Irrigation Schemes will also entail construction of access roads, weather stations and office blocks. In addition, Integrated Catchment Management Activities and Component 2 Value Chain Development (CDD-Type), can likely pose cumulative environmental and social impacts that may become significant/adverse during construction

and operation phases. In view of the above, the proposed IDCRP project has been classified as Category A based on World Bank Environment and Social Safeguard Policies. During screening, the sub-projects will be screened and placed under overall-project Cat. A and where necessary/justified can be qualified as Cat. B, or C a position that can be confirmed during detailed and subsequent project preparation.

#### 4.4 KEY STEPS IN ENVIRONMENTAL & SOCIAL ASSESSMENT UNDER OP 4.01

The section below illustrates the steps involved during environmental and social assessment and management process as per Ugandan regulations and are also in tandem with OP 4.01 and will thus be used to guide screening, assessment, review and approval of subprojects under the IDCRP.

##### 4.4.1 STEP 1: SCREENING OF ACTIVITIES AND SITES

MWE through its Department of Water for Production as the national implementing agency will carry out scoping and screening of the sub-projects using the Environmental and Social Screening Form (ESSF) in Annex 3. The ESSF requires information that determines the characteristics of the prevailing local bio-physical and social environment with the aim of assessing the potential project impacts on it. The ESSF should also identify the potential socio-economic impacts that will require mitigation measures and or resettlement and compensation.

##### 4.4.2 STEP 2: ASSIGNING THE APPROPRIATE ENVIRONMENTAL CATEGORIES

- a. The first step will be to check and establish if the project is listed amongst those in the Third Schedule of the National Environment Act Cap 153 which require mandatory ESIA to be undertaken before its implementation;
- b. MWE will then assign the appropriate environmental category to the subproject based on the information contained in the ESSF as well description of the national criteria for categorization. The potential categories, have been described under Section 4.1 above and are in principle in line with the National Environment Act and EIA Guidelines of Government of Uganda:
- c. Activities that require a full Environmental and Social Impact Study (ESIS), either because (i) they meet the general criteria in the Third Schedule of the National Environment Act, (NEA) are out of character with their surroundings, are of a scale not in keeping with surroundings, or involve major changes in land use; (ii) are types of projects listed in the Third Schedule; (iii) are located in a nature conservation area; or (iv) are identified in other laws or regulations as requiring EIA because of their location. Under the World Bank categorization, these are likely to fall under Category A. Based on the level of infrastructures to be developed under Component 1, as well as some activities under Component 2 will likely generate cumulative adverse significant impacts implying the project is category A type requiring preparation of full scale ESIA's. This category will require two stage public consultations and disclosure during the ESIA process.
- d. Activities for which additional information is needed to determine what level of environmental analysis and/or management is appropriate and for which mitigation is easily identifiable. These will likely be Category B under the World Bank categorization. Under GoU requirements, a Project Brief suffices and under the World Bank requirements, an ESMP suffices. Most of Component 2 activities qualify to be placed under this Category.
- e. Activities that are determined by the ESIA Consultant and in the opinion of the Executive Director NEMA, that, such activities will not have any significant or adverse potential impact on the environment, (First Schedule in the National Environment Act Cap. 153) will require a Project Brief or an ESMP to be prepared based on the review of the Scoping Report for the proposed project. Such projects are most likely Category B or Category C as per the World Bank categorization.

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#### 4.4.3 STEP 3: CARRYING OUT ENVIRONMENTAL ASSESSMENT

The ESIA will be conducted by the consultancy firms registered by NEMA, and ToRs shall be approved by both NEMA and the World Bank. However, Project Briefs (equivalent of an ESMP as per OP 4.01) may be prepared by non-NEMA registered persons for Component 2 sub-project activities. A Project Brief doesn't require approval of ToRs by NEMA but their ESMP is reviewed and approved by NEMA and the World Bank. However, in case an ESIA needs to be undertaken, the ToRs for the study will be prepared by the Environment Officer in the Department of Water for Production in the Ministry and such ToRs have to be reviewed and approved by NEMA and the World Bank. The ESIA report will identify and assess the potential environmental and social impacts for the planned activities, assess the alternative solutions, and will design the mitigation, management and monitoring measures to be implemented.

Unlike the ESIA, a Project Brief does not require a scoping report and neither submission of ToRs for approval by NEMA. The ESMP or Project Brief will for each potential impact include: mitigation measures, monitoring indicators, implementing and monitoring agencies, frequency of monitoring, cost of implementation, and necessary capacity-building. It is possible that after completing the Checklist, the Environmental Specialist may recommend that the subproject concerned should be subjected to a full ESIA and submitted to NEMA for review and their decision concerning approval.





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#### 4.4.3.2 PREPARATION OF A PROJECT BRIEF/ESMP

According to Regulation 5 of the EIA Regulations, 2006, a Project Brief/ESMP is to contain amongst others, the following:

- a. the nature of the project in accordance with the categories identified in the Third Schedule of the Act;
- b. the project area of land, air and water that may be affected;
- c. the activities that shall be undertaken during and after the development of the project;
- d. the design of the project;
- e. materials that the project shall use (including both construction materials and inputs);
- f. possible products and by-products, including waste generation of the project;
- g. the number of people that the project will employ and the economic and social benefits to the local community and the nation in general;
- h. the environmental effects of the materials, methods, products and by-products of the project, and how they will be eliminated or mitigated; and
- i. Any other matter which may be required by NEMA and/or World Bank.

In addition to the above, it is currently a practice and requirement by NEMA and World Bank to include details of stakeholder consultations in Project Briefs/ ESMPs.

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#### 4.4.4 STEP 4: PUBLIC CONSULTATIONS AND DISCLOSURE

Public consultation will be initiated during the scoping, ESIA preparation stages and views of stakeholders (general public and lead agencies) included in the Project Brief/ ESMP or ESIA depending on the level of assessment required. Given the fact that IDCRP is a Cat. A project, second stage disclosure and Public Consultations shall be undertaken for Component 1 sub-projects ESIA's to give the stakeholders the opportunity to review the proposed mitigation measures and accordingly influence the final ESIA. Public consultation will also be an integral part of the process throughout the planning and execution of the project. The Project safeguards staff will interact closely with PAPs/communities, project personnel, government departments, NGOs right from the early stages of the project preparation on a regular basis for developing and implementing the respective project ESIA's/ESMPs and RAP where applicable. For this purpose, public contact drives shall be organized by MWE for purposes of ensuring that, the consultations are meaningful, participatory and largely inclusive covering social spectrum of stakeholders including vulnerable groups. During the public awareness drives, it will be ensured that only accurate information is given about the project and its possible environmental and social impacts. The opinion/suggestions made by the community/affected groups shall be incorporated in the respective ESIA/ESMP and Resettlement Action Plans. After clearance, the assessment reports (ESIA/ESMP, RAPs, and PBs etc. including category B) shall be disclosed both in Uganda through the daily print media by Implementing Agency and at WB's *Infoshop* by IDA.

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#### 4.4.5 STEP 5: REVIEW AND APPROVAL OF ESIA

This will take the following steps:

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##### 4.4.5.1 ROLE OF DAM SAFETY PANEL

When the Bank finances a project that includes the construction of new dams (such as under IDCRP), it requires that, such dams be designed, and their construction supervised by experienced and competent professionals. In addition, it also requires that the Developer adopts and implements certain dam safety measures for the design and a host of other considerations including construction, operation, and maintenance of the dam and associated works. As such, this being Category A project, there will be need for a Dam Safety Panel of Experts who will be required to review

the ESIA and Engineering Designs, before submission to NEMA and World Bank for further review and approval/clearance, respectively.

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#### 4.4.6 REVIEW AND APPROVAL BY NEMA AND BANK CLEARANCE

Following internal review of the ESIA/ESMP/PB by MWE (Department for Water for Production) and the Bank, the ESIA report will be forwarded to NEMA for their review and decision i.e. approval. If the Executive Director is satisfied that the subproject will have no significant impact on the environment, or that the assessment done discloses enough mitigation measures to manage anticipated impacts, s/he may approve the project. The Executive Director shall then issue an EIA Certificate of Approval for the project. Similarly, when submitted to the World Bank, the Bank will review, provide guidance on content and compliance with safeguard policies, and either clear or decline to clear with justified technical reasons. It is important to note that, ESIA review and approval is done by both NEMA (through issuance of Letter of Approval) while Bank will issue clearance for the project ESIA.

It is important to note that the review and approval process is to be carried out in parallel with the review and approval of the technical, economic, financial and other aspects of the subprojects. Implementation of subprojects cannot commence until the environmental and social aspects have been reviewed and appropriate mitigation measures have been adopted. As possibilities of social impacts regarding land acquisition, the implementation of subprojects cannot proceed until the resettlement and/or compensation plans have been prepared and implemented after clearance by the Chief Government Valuer (CGV) in the Ministry of Lands, Housing and Urban Development (MoLHUD).

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#### 4.4.7 STEP 6: ENVIRONMENTAL MONITORING

Environmental and social monitoring aims at checking the effectiveness and relevance of the implementation of the proposed mitigation measures. The PIU Environment Specialist will be responsible for monitoring implementation compliance and preparing of progress reports to be submitted to the Bank as well and not only to NEMA. On a day to day basis, the District Environment Officers (DEOs) and the Community Development Officers (CDOs) alongside the Environmental Safeguards Officer in MWE (Department of Water for Production) will be compiling the reports (after verification on ground) and submit to the Bank and NEMA. Also monitoring shall also be undertaken by the Supervising Consultant – who will be required to employ an Environmental, Health and Safety Officer (EHS-Officer) to supervise the contractor.

The monitoring indicators and checklists will be developed by implementing agencies' Environmental Specialists based on the mitigation measures and the ESMP. In case of any civil works, at the end of subproject construction phase, a Certification for Compliance integrating Environmental and social issues for the completion of works is issued by MWE. It is also worth noting that World Bank will also from time to time, as part of its Project Support Supervision, be involved in monitoring and providing technical guidance throughout project implementation.

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#### 4.4.8 DISCLOSURE OF SUBPROJECT INFORMATION

In compliance with World Bank Policy on Information and Uganda EIA Regulations, before a subproject is approved, the applicable documents (ESIA, ESMP and/or RAP and associated management plans) must be made available for public review at a place accessible to local people (e.g. at a local government office/project location/site), and in a form, manner, and language they can understand. It is recommended that the ESIA, ESMPs and RAPs be disclosed in the same location that the community development plans are made public to ensure that there is wide access to the documents. In addition, copies of the ESIA/ESMPs shall be made available to the public through the public libraries and websites of participating District Local Governments, MWE, MAAIF, NEMA. Any arising comments from the public shall be taken into consideration by the project depending on the stage of the project.

## 5 PROJECT GENERIC IMPACTS AND MITIGATION MEASURES

The project will present both negative and positive impacts which can be summarized in terms of:

### 5.1 POSITIVE ENVIRONMENTAL AND SOCIAL IMPACTS

The project will have a number of positive environmental and social impacts for people such as:

1. From **environmental sustainable perspective**, the project is to be implemented within watersheds depending on their levels of deforestation, status of environmental degradation, or degraded lands, and degree of bank erosion. This will be a big positive impact in that, land and the environment will be restored including their productivity;
2. The plans to put in place **irrigation infrastructures will go a long way to addressing challenges of water availability** which is a growing limitation to agricultural production and productivity;
3. Proposals to include **apiculture and aquaculture will all demonstrate the benefits of sustainable** use of natural resources for livelihoods of the communities and supply of much needed foods for healthy living of the communities;
4. Investments in **irrigation facilities will improve water use efficiency** thereby guaranteeing agricultural production without necessarily waiting on rains as is traditionally practised;
5. The project will **contribute to the development of national capacity towards early warning** and predictions through planned establishment of 4N<sup>o</sup>. of class B-climatic stations the irrigation schemes;
6. By and large, the project is expected to have significant positive impact on social and poverty conditions by increasing productivity and production of food sources such as fisheries, honey and better crops yields through drop intensification drives which ensures food security at household levels as well as sources of incomes which translates to better livelihoods;
7. Climate Smart Agriculture ensures sustained crop production without over-reliance on rain-fed agriculture giving assured sources of food and income for the participating farmers;
8. The project will generate critical skills in highly demanded and specialized trainings in areas of crop production and animal husbandry including apiary which is a sustainable form of land use and a successful cottage enterprise;
9. Enhancing technology of production along the entire commodity value chains, including providing farmers with access to technical knowledge and improved seeds and breeds;
10. Access to market will provide much needed market information for better marketing of the produce giving farmers better prices and good earnings from their enterprises. The project will also **support formation of FBMOs/WUA** which will help to manage water infrastructures at grassroots thereby guaranteeing their sustainability;
11. **Creation of employment opportunities** for the local workers to be recruited on the project especially amongst neighbouring communities;
12. The project areas especially in Isingiro will support local livestock farmers through **provision of watering facilities for livestock** and this will go a long way to addressing water scarcity which is chronic in those areas;
13. The project will have **indirect positive impact through sale of construction materials** such as murram and through such, the locals can earn some additional incomes for their livelihoods and support their families;
14. The **planned installation of sedimentation and erosion control structures** will address issues of land degradation in the project sites and heir environs thereby ensuring sustainability of the land for production;

15. The project initiatives to **establish crop improved and adapted varieties** of multi-purpose economic trees will achieve a double pronged benefit by addressing Greenhouse gas emissions as well as serve as food security in the communities;
16. **Improved household acreages:** In most rural areas, crop production systems using rudimentary cottage labor and equipment have for long typified agricultural production in the proposed project areas which in a way has kept it plunged in food insecurity, limited production and productivity, limited household acreages summing to poor household incomes. The project is envisaged to assist farmers clear their lands alongside a host of farming husbandry support services which will bring about improved production at household levels.
17. **Food security at household levels;** It is common in many parts of the country now to be food insecure and in view of these, the project envisages to bring productive use, some acreage of land into crop production through irrigation thereby addressing limitations caused by climate change challenges;
18. There will be improved accessibility, trade and commercial opportunities after the planned rehabilitation of community access roads (Figure 27) which will enhance commercial opportunities in the beneficiary areas. In addition, there will be improved delivery of social services through improvement connectivity to the nearest road network thereby enhancing accessibility to markets and other public and social services such as health and education/schools.



**Figure 31: Narrow community Access road from Kabuyanda leading to Isingiro main road**

19. **Gender empowerment:** in most rural areas including where the project is to be implemented have women taking a big burden in providing for the family needs. Female headed households have the full burden to provide for their families. However, a large proportion of the household labor is provided by the women, yet they do not control resources. All these have kept women oppressed in terms of economic decisions regarding households' income use. Aware of these disparities, the project has measures aimed at empowering the women who are participating in the project through training and skilling on income generation, record keeping and savings which will be some stride towards women empowerment;
20. **Crop diversification:** at the moment, the project areas mainly rely on a limited range of crops both food and cash crops as such, their income base is limited. The project plans to introduce irrigation technology which is

adaptable to rural areas through which, other crops especially horticultural crops can be grown alongside traditional crops in the rural areas of the project. This diversification implies diverse sources of income at household and improved livelihoods as well. In all, farmers will be in position to grow horticultural crops which not only improve income earnings but also improve household food security and nutritional needs which will lead to increased and stabilized household incomes from agriculture for the households that will be participating in the project;

21. Fuel saving stoves technologies will address sustainable use of biomass energy thereby address rapid loss of vegetation augmented by unsustainable use of wood as source of energy at household levels;
22. Planned construction of investments in integrated river banks stabilization will protect the rivers from siltation and sedimentation from run-off;
23. Improvement of access in irrigation areas through rehabilitation and construction of farm access roads within the schemes which will help farmers transport their produce out of the fields; and
24. Development and transfer of technical skills to the beneficiary communities; the project will involve use, and operations of equipment especially earth moving, construction and general plant equipment which will be done by skilled personnel mostly from outside the communities. Once in the communities, local who are keen will equally benefit from a number of on-job trainings hence building their technical capacities in working on such equipment.

## 5.2 PROJECT NEGATIVE ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

These have been discussed thematically as follows:

### 5.2.1 DEVELOPMENT OF MULTI-PURPOSE IRRIGATION FACILITIES

#### 5.2.1.1 ENVISAGED INVOLUNTARY RESETTLEMENT

This is likely to arise through potential land-take for construction of common infrastructure facilities such as farm roads, irrigation/water distribution channels and dams amongst others. These will be mitigated as detailed in the RPF.

#### 5.2.1.2 LIKELY IMPACTS ON LIVELIHOODS

Implementation of project works will have a short-term negative impact on some of the farming activities through works on water channels and dam construction which in the end will impact on livelihoods. This will be a short-term negative impact and once works are completed, the functionalities of the facilities will be restored.

#### 5.2.1.3 CONCERNS OVER INADEQUATE CONSULTATION OF VARIOUS STAKEHOLDERS

This is likely to occur in some sections especially omitting vulnerable groups (like youth and women) and in the end, their input is missed in the planning of the interventions and bring about, intensification of existing gender disparities. It is suggested that, subsequent Environmental Assessments will have in place, robust Stakeholders Engagement Plans to address such issues (SEP), and this being an EA Cat. A project, at-least two stage Stakeholder Consultations and Disclosure shall be undertaken for every ESIA prepared.

#### 5.2.1.4 LABOR INFLUX RELATED SOCIAL RISKS

Those related to influx of labor into project areas thereby breeding labor related issues, conflict between the workers and host communities, HIV/AIDS and child labor, child abuses and related child and sexual exploitation as well as

instances of crime are all envisaged to arise alongside Gender Based violence. General provisions to address these risks are listed in this ESMF.

#### 5.2.1.5 POTENTIAL CONFLICT OVER WATER USAGE

Being multi-purpose dams, there can be conflicts over their access and usage. Watering cattle, fish farming and water conveyance for irrigation needs if not well managed can trigger conflicts amongst the users. It is suggested that, the Water User Associations take charge of ensuring the facilities are operated and managed sustainably.

#### 5.2.1.6 POTENTIAL REDUCTION IN DOWNSTREAM FLOWS

Uncontrolled abstraction of water for irrigation without due consideration of the river environment can likely lead to decrease in downstream flows of water with attendant environmental and social impacts which can be characterized by conflicts amongst communities. This raises risks of conflict with downstream water demands for a range of identified uses such as watering livestock, domestic needs and a host of other needs. In the Feasibility Study, Environmental Flow (EF) assessments for the project be conducted and established to guide on the amounts abstracted sustainably i.e. Minimum Environmental Flow (MEF) to guarantee maintenance of the essential river ecological, socio-economic and hydrological functions.

#### 5.2.1.7 SEDIMENTATION AND SILTATION OF THE WATER COURSES

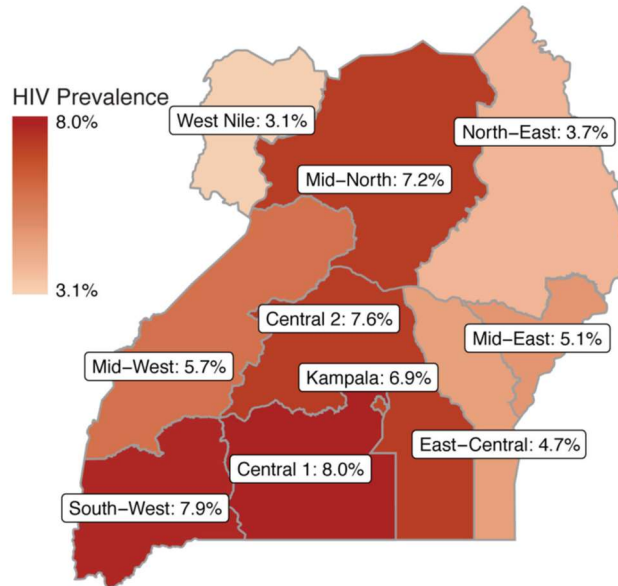
Construction activities including clearance of vegetation, stream crossings, operation of large equipment and equipment lay down, will potentially lead to soil disturbance at the construction sites, resulting in soil erosion, degradation of water quality in the project areas and subsequent sedimentation of the river. These sources of sediment load will likely affect water quality. This is gauged a low negative impact to be mitigated through restoration of the sites after works and undertaking works in accordance with Contractors Environmental and Social Management Plans (CESMPs).

#### 5.2.1.8 SECURITY RISKS, THEFTS, AND POSSIBLE VANDALISM ON PROJECT FACILITIES AND INSTALLATIONS

Inadequate construction site security poses a significant risk to assets, construction materials and property. Theft/vandalism of assets, materials and property would increase construction costs and cause delays in project completion. Improper security measures may also pose a security risk for construction workers and particularly foreign staff on construction sites.

#### 5.2.1.9 HIV/AIDS RISKS

According to Uganda Population Based HIV Based Impact Assessment -UPHIA 2016/2017 report, HIV/AIDS prevalence based on regional dimension and in particular, Western Region (where Kabuyanda and Mitanda/Enengo sites fall) posts a prevalence of 7.9% making it second highest after central region (Figure 28). No doubt, this means, there are risks for workers from the scourge and the project has to put in place measures to address it in terms of awareness and sensitization, distribution of condoms, conducting voluntary counseling and testing (VCT) amongst other interventions.



**Figure 32: Regional Prevalence of HIV in Uganda**

#### 5.2.1.10 ISSUES OF CHILD LABOUR IN RICE IRRIGATED FIELDS

The regional distribution of child labor in Uganda indicates that eastern region (where the proposed Amagoro site falls) has a relatively higher proportion of working children aged 5-9 years and reveals the highest number of working children compared to other regions (Figure 29). ***WUA as well as the local leaders will be key in championing education of the farmers to see that, children are not engaged in the work in the fields thereby compromising the Universal Pupil Education (UPE) policy.***



**Figure 33: Children scaring birds in areas of Amagoro**

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#### 5.2.1.11 DISEASE INCIDENCES

Malaria is prevalent in the area and with the reservoirs in place; the project is likely to change the pattern of malaria infections during the year, with an extension into the dry season arising from dams for irrigation. The project has also the potential to increase the risk of infections by creating additional habitat for the snail vector and increasing exposure of the population, especially children, to water. Inadequate drinking water, sanitation and hygiene (WASH) are important risk factors, especially in a low income setting like this project area. Incidences of these infections/diseases may be exacerbated by dam construction activities on the rivers and increased deposition of wastes in the water from human activities near the water bodies. *Sanitary facilities for the all workers shall be provided during the construction phase and that, during the operational phase, WUA should sensitize communities on the importance of improving water and sanitation to prevent the burden water borne diseases in the irrigation facilities.*

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#### 5.2.1.12 RISKS OF CHILDREN DROWNING IN DAMS

There are likely risks of children getting tempted to swim in the dams and some risk drowning is reported common in irrigation water holding facilities. Sometimes such waters get to hold some fish and children are likely to be attracted to fish in such water risking drowning and such a risk will be managed by the WUA who will take a lead to sensitize communities on such risks specially to keep their children away from dams.

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### 5.2.2 CONSTRUCTION OF ACCESS ROADS

The likely environmental and social impacts of roads rehabilitation are expected to be minor given the low mechanized road works that will be involved. The project will not support opening of new roads but rather, concentrate on improving existing access roads. The priorities for road investment at district level will be based on the size of agricultural production for respective commodities. Access road works will include re-shaping (slight earthworks), provisions for culverts and small bridges and limited lateritic lining to treat critical points as needed. Roads design could include drainage ditches where longitudinal slopes are accentuated.

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### 5.2.3 CONSTRUCTION OF OFFICES BLOCKS

These will include:

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#### 5.2.3.1 LOSS OF LAND TO THE OFFICE INFRASTRUCTURE

The proposed office blocks will permanently take up fairly minimum land area and the land will be given by the local governments hence, no needs for compensation are anticipated. However, the sites and in particular, the areas where the office block is to be set up has only grass vegetation as such, no trees or elaborate vegetation will be lost. This will be a small negative impact to be mitigated through planting green belts on non-parking land areas in the compound. In addition, works will be restricted to areas required for the infrastructure.

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#### 5.2.3.2 OCCUPATIONAL HEALTH AND SAFETY HAZARDS

The movement of materials into the construction site, and the actual construction activities by workers may cause accidents and injuries. Provide adequate and appropriate Personal Protective Equipment (PPE) such as safety boots, helmets, gloves, overalls and this should be in keeping with the task and exposure a worker is subjected to and also, First Aid Kit must be kept on the site and modestly stocked with necessities for any emergencies.

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#### 5.2.3.3 SAFETY OF VISITORS AND GENERAL PUBLIC



The contractor will have an obligation to put in place, measures to protect visitors to the construction site, neighbors, and the general public to avoid intrusion and risks of accidents and theft of construction materials. This risk will be managed by restricting access to the site through fencing off the site and putting in place, safety signs and warning posters visible to the public informing them about the site works.

#### 5.2.3.4 RUNOFF AND POSSIBLE SOIL EROSION

The construction works in terms of excavations and foundation works will likely generate loose soils which can easily be eroded by both wind or storm water thereby clogging roadside drains and, sometimes flooding areas. The contractor will schedule for the cut to spoil materials to be transported and disposed at sites agreeable to the Engineer for the project as well as some of the cut to spoil materials to be used for back-filling the foundation works. There will be measures for rainwater harvesting as part of office blocks to be constructed.

#### 5.2.3.5 SETTING AND OPERATION OF TEMPORARY WORKERS' CAMPS AND EQUIPMENT STORAGE YARDS

The setting and the operations of the temporary camp site might be necessary at the construction site. This will raise public health issues on poor human and domestic waste disposal. The contractor will address this through construction of pit latrines which will be demolished, and the places fully restored and later by fully landscaping the site. Other non-human waste will be collected and disposed of at designated collection areas in consultations with the areas DEOs.

#### 5.2.3.6 NOISE NUISANCE

The use of construction equipment during site clearance and construction works will generate noise and this will be short-term (limited to construction phase) and will not pose a threat to the health and serenity of the neighborhood. Construction activities that will generate disturbing sounds should be restricted to the working hours from 8:00am-5:00pm. In addition, workers operating equipment that generate noise should be equipped with noise protection gear and that, the workers operating equipment generating noise levels be given appropriate personal protective equipment such as earmuffs.

#### 5.2.3.7 GENERATION OF WASTES DURING CONSTRUCTION AND OPERATION PHASES

Construction of the proposed zonal lands office will generate waste including debris and cut to spoil among others. In addition, the project is expected to employ approximately between 20-30 workers during the construction phase who will also generate waste. The Contractor will provide for waste disposal on site and management of solid waste generated by the workforce. Construction materials and equipment will be confined to the site. Furthermore, during the operational phase, the office management will sort the waste, keep it in different garbage bins and deliver this sorted waste/debris to the dump sites gazetted by the districts in the areas of jurisdiction.

#### 5.2.3.8 IMPACT OF CONSTRUCTION EXTRACTION IMPACTS

The required materials for construction will include sand, murrum, gravel, clay bricks, steel trusses, iron bars, cement among others. The dealers in these materials will be responsible for ensuring their extraction is undertaken in an environmentally sound manner and where the contractors engage in extraction of such materials, there should be agreements with the land owners to have such sites fully restored and areas cleared by DEOs.

#### 5.2.3.9 POTENTIAL INSTANCES OF CHILD ABUSE

The project should not recruit children as workers on the project in contravention of the child labor laws and International Labor Organization (ILO) as well as IFC PS 2 regarding labor recruitment. All those looking for work but

below 18 years will not be allowed into the project including possible emerging livelihood opportunities related or mean to serve the project (food preparation etc.).

#### 5.2.3.10 RISKS OF BUILDING COLLAPSING

There has been increasing incidence of buildings collapsing during construction. This is to be managed through the project employing an Engineer to oversee the construction process and, ensuring the designs for project infrastructure are approved by the relevant local authorities as provided for in the Public Health Act 1964.

#### 5.2.4 WORLD BANK'S SAFEGUARDS INCIDENT REPORTING TOOL

World Bank's Safeguards Incident Reporting Tool provides classification of incidents (accidents) and timelines for reporting to the Client and World Bank by Supervision Consultants and Contractors as summarised on Tables 6-8 below.

**Table 6: FORM I: Incident Status Log**

a. Date of Incident	
b. Time of Incident (Local Time)	
c. Location of Incident (Place Name or Latitude & Longitude)	
d. Description of Incident	
e. Actions at Site	
f. Number of Personnel at Site	
g. Casualties	
h. Weather Conditions (Wind/Visibility/Forecast/Sunrise/Sunset)	
i. Time and date of Status Log update	

**Table 7: FORM B: Incident Status Log**

INCIDENT REPORTING DETAILS			
<b>Date of Incident</b>	• / /	<b>Time of incident:</b> (please use 24hr format)	
<b>Incident Reported by</b>	• <b>Name:</b>	<b>Project Employee</b> <input type="checkbox"/> <b>Contractor</b> <input type="checkbox"/> (name) <b>Member of Public</b> <input type="checkbox"/> <b>Sub-Contractor</b> <input type="checkbox"/> (name)	
<b>Project Relation (if applicable)</b>	• <input type="checkbox"/>	• <b>Project Name:</b>	• <b>Contract</b> <input type="checkbox"/> <b>Incident Report No:</b>
<b>Project Manager (PM)</b>	• <b>Name:</b>	• <b>PM Email and phone contacts:</b>	
<b>Location of Incident: (Where applicable)</b>	• <b>Region:</b>	• <b>District:</b>	• <b>Village:</b>
<b>Outcome of the incident:</b>			<b>Incident Notification:</b> For serious incidents: <b>Date notified:</b> / /
DESCRIPTION OF INCIDENT			
<b>Type of incident:</b> <i>(Check Appropriate Boxes, can be multiple selections)</i>  <b>Please clarify if required:</b>  <b>Does this incident involve a member of the public?</b>	• <b>Safety</b> <input type="checkbox"/>  <input type="checkbox"/> Slips/Trips / Falls <input type="checkbox"/> Plant and Equipment <input type="checkbox"/> Cranes and Lifting <input type="checkbox"/> Working at Height <input type="checkbox"/> Confined Space <input type="checkbox"/> Vehicles and Driving <input type="checkbox"/> Traffic Management <input type="checkbox"/> Hand held tools <input type="checkbox"/> Electrical <input type="checkbox"/> Excavation/Trenching <input type="checkbox"/> Hazardous Substances <input type="checkbox"/> Hot Work <input type="checkbox"/> Foreign Objects <input type="checkbox"/> Injections <input type="checkbox"/> Ergonomics: musculoskeletal acute e.g. sprain, strain etc. <input type="checkbox"/> Other (specify): _____  <input type="checkbox"/> Yes <input type="checkbox"/> No	• <b>Health</b> <input type="checkbox"/>  <input type="checkbox"/> Ergonomics: e.g. RSI, back pain etc. <input type="checkbox"/> Asbestos <input type="checkbox"/> Dust <input type="checkbox"/> Bites/Stings <input type="checkbox"/> Chemical exposure <input type="checkbox"/> Noise exposure <input type="checkbox"/> Alcohol and drugs <input type="checkbox"/> Fatigue <input type="checkbox"/> Needle stick <input type="checkbox"/> Vibration <input type="checkbox"/> Bacterial <input type="checkbox"/> Mental Health <input type="checkbox"/> Health (e.g. asthma, heart attack) <input type="checkbox"/> Other (specify): _____ Other: <input type="checkbox"/> Process Loss <input type="checkbox"/> Production Loss <input type="checkbox"/> Damage Reputation <input type="checkbox"/> Disruption to a community <input type="checkbox"/> Security Threat	
	<b>Incident Description:</b> (Step by step account of the incident).		

What are the <u>existing</u> controls in place? (e.g. spill kits, bunding, clearing area pegged, PPE worn, machine guarding)					
Corrective Actions	<ul style="list-style-type: none"> <li>Action Description</li> </ul>	<ul style="list-style-type: none"> <li>Responsible Person and Role</li> </ul>	<ul style="list-style-type: none"> <li>Due Date</li> </ul>	<ul style="list-style-type: none"> <li>Completion Date</li> </ul>	
Control(s) put in place <u>before and after</u> the incident to Rectify, Contain or Remedy the situation					
Persons Involved	<ul style="list-style-type: none"> <li>Name:</li> </ul>	<ul style="list-style-type: none"> <li>Job Title(s):</li> </ul>	<ul style="list-style-type: none"> <li>Employee Type</li> </ul>		
	<ul style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> </ul>	<ul style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> </ul>	<ul style="list-style-type: none"> <li>1.</li> <li>2.</li> <li>3.</li> <li>4.</li> </ul>		
What was the actual consequence?	<input type="checkbox"/> Insignificant	<input type="checkbox"/> Minor	<ul style="list-style-type: none"> <li><input type="checkbox"/> Moderate</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Major</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Catastrophic</li> </ul>
What was the Potential Outcome?	<input type="checkbox"/> Low	<ul style="list-style-type: none"> <li><input type="checkbox"/> Medium</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> High</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Very High</li> </ul>	
What is the Risk Rating <u>after</u> controls are put in place?	<ul style="list-style-type: none"> <li><input type="checkbox"/> Low</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Medium</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> High</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Very High</li> </ul>	
Is this incident required to be reported to WorkSafe or Energy safe?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<ul style="list-style-type: none"> <li>Report made by:</li> </ul>			
	<ul style="list-style-type: none"> <li>Reference No:</li> </ul>	<ul style="list-style-type: none"> <li>Date Report Made:   /   /</li> </ul>			
<b>INJURY DETAILS (ONLY APPLICABLE IF THE INCIDENT RESULTED IN PERSONAL INJURY)</b>					
<ul style="list-style-type: none"> <li>How was the injury sustained? (<i>Mechanism of Injury</i>)</li> </ul>	<input type="checkbox"/> Fall from a height <input type="checkbox"/> Slips and Trips <input type="checkbox"/> Vehicle incident <input type="checkbox"/> Musculoskeletal (sudden movement, sharp pains) <input type="checkbox"/> Repetitive movement with low muscle loading <input type="checkbox"/> Exposure to Mental Health Factors <input type="checkbox"/> Exposure to vibration	<input type="checkbox"/> Exposure to noise (incl long term) <input type="checkbox"/> Contact with chemical or substance <input type="checkbox"/> Cuts, abrasions and lacerations <input type="checkbox"/> Contact to heat and cold <input type="checkbox"/> Contact with electricity <input type="checkbox"/> Insect bites and stings <input type="checkbox"/> Unspecified mechanisms of injury or other			
Treatment given & assessed by	<ul style="list-style-type: none"> <li>Name:</li> </ul>	<ul style="list-style-type: none"> <li>Job Title:</li> </ul>			

<b>Type of treatment given</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> None required</li> <li><input type="checkbox"/> First Aid</li> <li><input type="checkbox"/> Medical (doctor/hospital)</li> <li><input type="checkbox"/> Emergency Department</li> </ul>		
<b>Work Related Injury</b>	<ul style="list-style-type: none"> <li>This is a work-related injury <input type="checkbox"/> This is a non-work related injury <input type="checkbox"/></li> </ul>		
<b>Bodily location of the injury: (Please select all that apply)</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Eye</li> <li><input type="checkbox"/> Face</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Shoulders and arms</li> <li><input type="checkbox"/> Hands and fingers</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Internal organs</li> <li><input type="checkbox"/> Trunk (other than back and excl internal)</li> </ul>
<b>Comments:</b>			

**DETAILS OF PERSON COMPLETING THIS FORM, REVIEW AND SIGNOFF**

<b>Form complet</b>	<b>Name:</b>	<b>Signature:</b>	<b>Date:</b> / /
<b>Contractor Review and Sign Off (construction/ maintenance)</b>			
	<b>Name:</b>	<b>Signature:</b>	<b>Date:</b> / /
<b>Employer Review and Sign Off (IDCRP Employee Incident)</b>			
<b>Level 1.</b>	<b>Name:</b>	<b>Signature:</b>	<b>Date:</b> / /
<b>Level 2.</b>	<b>Name:</b>	<b>Signature:</b>	<b>Date:</b> / /
<b>Level 3.</b>	<b>Name:</b>	<b>Signature:</b>	<b>Date:</b> / /

**Table 8: Incident Details Reporting Form**

<b>Incident</b>	<b>Details of Incident</b>
a. Date	
b. Time	
c. Name of injured worker/damaged property	
d. Age	
e. Gender	
f. Address of worker	
g. Supervisor/foreman work post/location of the accident	
h. Near miss/Accident/Incident (NM/A/I)	
i. Description of Accident/Near Miss/Incident	
j. Person impacted (Third Party/Project Team)	

k. Nature of accident: Env/Soc/OSH/Damage to property	
l. Action Taken/Treatment given	
m. Body part injured/part damaged	
n. Cause of accident/near miss/injury	
o. Was it a notifiable accident/incident?	
p. Reported by	
q. Follow up action	
r. Signature	
s. Investigation ref.	
t. Mitigation for recurrence of accident	

**Table 9: Summary Generic ESMP and Monitoring Measures for IDCRP based on activities<sup>11</sup>**

<b>Emergency</b>	<b>Mitigation activities</b>	<b>Potential risks</b>	<b>Generic mitigation Measures</b>	<b>Responsible Agency</b>	<b>Monitoring Agency</b>
Weather-based risks Drought, flooding, hailstorm.	<ul style="list-style-type: none"> <li>a. Irrigation improved crop varieties</li> <li>b. catchment restoration activities</li> <li>c. Providing restocking/replanting materials.</li> </ul>	Health, safety, waste and sanitation, seed and stocking material quality.	<ul style="list-style-type: none"> <li>a. OSH and sanitation management to be part of CERIP catchment restoration activities</li> <li>drainage works certified seed suppliers.</li> </ul>	MWE, MAAIF, District local Govts	<ul style="list-style-type: none"> <li>MAAIF</li> <li>MWE/Uganda National Meteorological Authority (UNMA)</li> <li>District Local Governments.</li> </ul>
Pests and disease epidemics	<ul style="list-style-type: none"> <li>a. Surveillance and early warning</li> <li>b. Extension services</li> <li>c. Procurement and use of pesticides</li> <li>d. Providing restocking/replanting materials</li> </ul>	Health and safety	<ul style="list-style-type: none"> <li>a. Part of CERIP;</li> <li>b. Use of pesticides following guidance in the PMP;</li> <li>c. Introduction and use of improved seed varieties;</li> <li>d. Use healthy and disease-free planting materials; and</li> <li>e. Disease surveillance and quarantine.</li> </ul>	MWE, MAAIF, & DLGs	MAAIF
Natural a man-made such as landslides, wild-fires, civil wars	<ul style="list-style-type: none"> <li>a. Design and construction of climate resilient irrigation facilities/dams;</li> <li>b. Early warning systems</li> <li>Catchment management</li> </ul>	Health and safety Social impacts	<ul style="list-style-type: none"> <li>a. Part of CERIP</li> <li>b. Social Impacts screening as per ESMF guidance</li> </ul>	MWE, MAAIF, DLGs and Office of the Prime Minister (OPM).	Disaster Preparedness Dept. OPM

<sup>11</sup> The generic ESMP has no costs for its implementation.

	Surveillance mechanisms Community engagement			Humanitarian agencies such as Red Cross	
Risks of collapse of office structures	Structural designs be in accordance applicable construction standards for office blocks.	Health and safety Social impacts	Before such structures are occupied, there will be need for occupation permit from MoGLSD	MWE and DLGs.	



## 5.3 MONITORING, EVALUATION, AND REPORTING

### 5.3.1 MONITORING

Monitoring is required to ensure that all the required environmental and social mitigation measures, set out in the ESMF for the project are implemented satisfactorily. The objective of monitoring is to ascertain that, the proposed mitigation measures are being implemented and that, there is compliance to the terms and conditions for approval

The purpose of the environmental and social safeguards monitoring includes:

- a. Ensure that proper appraisals on the effects of sub-projects takes place and that proper measures are put in place to mitigate the effects;
- b. Set out the basis for compliance and enforcement of terms and conditions for approval;
- c. Design compliance strategies;
- d. Assess compliance with and management of the environment and social safeguards; and
- e. Ensure that all stakeholders participate in the sub-project processes

The environmental and social safeguards monitoring will be carried out by the staff of Department of Water for Production especially the Environmental Officer while in the Districts, the DEOs and CDOs will assume major responsibility of monitoring environmental and social compliance in the project in keeping with their sectoral mandates as enshrined in the National Environment Act Cap 153 and Local Government Act respectively. Other line agencies such as Departments of Occupational Health and Safety, Gender and HIV/AIDS in MoGLSD will through their respective district-based line agencies keep track of thematic issues in the project (i.e. HIV/AIDS, Child Protection, gender and OHS mainstreaming).

Monitoring, evaluation and reporting on environmental and social issues will form part of the overall -project implementation processes. It is expected that; the District Environment Officers will capture and report on environment and social issues on a monthly basis. The monitoring reports will then be compiled and sent to Department of Water for Production in the Ministry for review and who will then prepare a consolidated quarterly monitoring report and share it with the Bank.

During works, the client (MWE) will engage a Supervising Engineer to ensure technical/engineering and safeguards issues are adequately addressed in the project. Of particular interest will be Engineer's modality of management of safeguards aspects which will be done through his team (i.e. Environmental and Social Specialist) who will be responsible for supervision, monitoring and regular reporting on safeguards issues in the project.

The Department of Water for Production through the Environment and Social Officers verifies the application of mitigation measures as contained in the field reports submitted to the Department. In this case, the Consultancy firm together with Ministry social and environmental officers will undertake regular visits to project sites to ensure implementation and documentation of progress for mitigation measures. Where feasible, the District staff social and environment Officers will support monitoring in line with mandates which is to oversee compliance of development project in the districts with environmental provisions. The reporting on environmental monitoring will be included

in the overall project progress report which will be shared with the World Bank, NEMA and line stakeholders as necessary. In all other implementing agencies will undertake the monitoring of their sub-component activities i.e. NFA and MAAIF and their information will feed into the overall monitoring report for the project.

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### 5.3.2 REPORTING

Implementing agencies for IDCRP project will be required to report on the progress of project implementation in line with financing agreement. It is expected that, such reports should capture the experience with implementation of the ESMF provisions and the reports will amongst others, provide:

- b. an assessment of extent of compliance with ESMF procedures, learn lessons, and improve future ESMF performance;
- c. to assess the occurrence of, and potential for, cumulative impacts due to project-funded and other development activities; and
- d. A record of progress, experiences, challenges encountered, lessons learnt and emerging issues from year-to-year implementation of ESMF that can be used to improve performance.

The reports shall include the following key information:

- a. An introduction, Reporting period and monitoring locations
- b. Scope of works and status of implementation of activity being reported on
- c. ESMF management actions undertaken during the reporting period
- d. Progress to date in implementing the ESMF, including key aspects monitored: such as waste management, health and safety practices, procurement/storage/and use of pesticides including their disposal, dust management, water quality, other environmental incidents and accidents, environmental awareness and training undertaken, etc.
- e. Key recommended follow up issues, actions, time frame and responsibility center(s).

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### 5.3.3 ANNUAL REVIEWS AND PERIODIC AUDITS

An independently commissioned environmental and social audit will be carried out periodically (between 12–36 months) depending on the level of implementation of the sub-project. The audit team will report to NEMA, the MWE, the MAAIF and the World Bank, who will lead the implementation of any corrective measures that are required.

An audit is necessary to ensure, that the ESMF process is being implemented appropriately, and that, the mitigation measures are being identified and implemented. The audit will be able to identify any amendments in the ESMF approach that are required to improve its effectiveness.

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## 5.4 OTHER SAFEGUARDS TOOLS FOR IDCRP

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### 5.4.1 RESETTLEMENT POLICY FRAMEWORK

The project under Sub-component 1 will support infrastructure developments ranging from irrigation infrastructures, office blocks and community access roads some of which may require minor land acquisition which could potentially lead to involuntary resettlement and/or restrictions of access to

resources or livelihoods. However, in view of the levels of project scales planned, it is envisaged that, there will be very minimal land take needs especially with respect to re-alignment and routing of such roads which will be restricted to existing alignments with minor deviations. In addition, there will be no need for acquisition of social safeguards team review concludes that the project may involve very minimal land acquisition of small strips of land required for expansion of irrigation canals and infrastructures. The Bank's Policy on Involuntary Resettlement (OP 4.12) is triggered and a Resettlement Policy Framework has been prepared alongside this ESMF to mitigate any associated risks. However, where sizeable areas of lands will be taken up, a Resettlement Action Plan (RAP) will be prepared. The RPF/RAPs will be used as planning and monitoring tools for addressing all land acquisition issues.

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#### 5.4.2 GRIEVANCE REDRESS MECHANISMS

This can be through Ministry based mechanism or project mechanism as below:

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##### 5.4.2.1 MWE CLIENTS SERVICE CHARTER FOR FINANCIAL YEARS 2017/18-2021/22<sup>12</sup>

MWE Client Service Charter is a social contract between the Ministry, as a service provider and its clients/service users. It specifies standards for the delivery, which MWE believes its clients/service users have a right to expect and sets out feedback and complaint handling mechanisms. The Charter therefore, defines the Ministry key results areas, the commitments relating to each of the result area as well as the performance standards which our clients should expect. The Charter also lays down the core values to guide our staff in service delivery, key among which are quality client service, credibility, good stewardship, transparency and accountability. Of relevance in this case, is the provision for redress of grievances in the Ministry through its Service Charter which will equally be applicable in this project (Annex 6).

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##### 5.4.2.2 IDCRP PROJECT GRM

A grievance mechanism must be present and made available to PAPs who have grievances or are not satisfied with any part of the resettlement and compensation process. These grievances could relate to the unfair compensation, delays in compensation money, encumbrances amongst PAPs and their relatives, valuation of assets, level of consultation, non-fulfilment of contracts, and timing of compensation, amongst others. Complaints and grievances also concern issues related to construction safety and nuisances caused by construction. Grievances will be handled through negotiation aimed at achieving consensus.

The goal of the Grievance Redress Mechanism (GRM) is to promote a mutually constructive relationship and enhance the achievement of project development objectives. The GRM is to ensure that complaints are directed and expeditiously addressed by the relevant agencies which are to enhance responsiveness and accountability. While a project-specific feedback and complaints

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<sup>12</sup> *MWE Clients Charter 2018-2021*

mechanism is set up, the project will incorporate the existing grievance mechanism that has been used in the past experiences.

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#### 5.4.2.3 TYPICAL GRIEVANCES UNDER THE PROJECT

Likely common grievances in the project implementation areas will include:

- a. Blockade of irrigation channels;
- b. Blockade/access of access to individual irrigation plots;
- c. Non-payment of work done;
- d. Access routes through a neighbors' garden;
- e. Non-payments of infrastructure construction materials;
- f. Animal raiding of crops
- g. Non-payment for land taken up by the project common infrastructures; and
- h. Encroachment on neighbors' lands.

At project level, each project site is expected to operate its mechanisms of handling feedback and complaints on the project. Such a mechanism will be checked to ascertain its effectiveness, accessible and transparent procedures to receive and resolve complaints and where need be and for purposes of delivering this project, it shall then be reviewed and modified accordingly.

Feedback or complaints shall be encouraged among all workers and community members throughout the project and resolved without undue delay. This will also be closely monitored and reported. It is important that, concerns are raised on project level before they are brought to the PIU level.

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#### 5.4.2.4 STEPS OF GRIEVANCE REDRESS

A verbal or a written complaint from aggrieved person will be received by the Project Manager or a person assigned in the project as the Grievance Officer (GO) and recorded in a grievance log (electronically if possible). Grievances can be lodged at any time, either directly to the Contractor, Sub-county/District Office or via the grievance committee member.

The process for lodging a complaint is outlined below:

- a. The GO will receive a complaint from the complainant.
- b. The GO will ask the claimant questions in their local language write the answers in English and enter them in English onto the Grievance Form.
- c. A representative of the community shall witness translation of the grievance into English.
- d. The GO reads the complaint in English and translates it into the complainant's local language on the Grievance Form.
- e. The local leader and the complainant both sign the Grievance Form after they both confirm the accuracy of the grievance.
- f. The GO lodges the complaint in the Grievance Log.

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#### 5.4.2.5 MECHANISM UNDER PROJECT

Local grievance redress committees will be initiated at the village level to record grievances and also help in mediation. This committee will comprise the Local council leaders or a trusted village elder, a religious representative, and specific vulnerable group representatives of relevance to the village i.e.

women and the disabled. Disputes will be resolved at the village level as far as possible. The GRC at the district and sub-county levels will be resolved under a County/District GRM constituted by the Project. At the County Level, the Grievance Redress Committee will be established to deal with any grievances unsettled at the village level. More serious grievances must immediately be referred to the police. More serious cases that involve assault, gender-based violence, rape and “serious” theft will not be resolved under this framework but are instead referred to the police for appropriate medical and psychosocial support service as well as prosecution process for survivors of such abuses.

#### 5.4.2.6 TASKS OF THE GRIEVANCE REDRESS COMMITTEE

The specific tasks of the GRC will be:

- a. Set up a systematic process of recording grievances in a register (Grievance Book) as well as electronically. The register should be located in the Field Management offices and should be accessible to residents.
- b. Both written and verbally communicated grievances should be recorded.
- c. Suggested categories are grievances regarding:
  - i. land uptake replacement structure or land, and procurement of construction materials;
  - ii. access to crop fields through other people lands;
  - iii. complaints about compensation for crops and lands taken up by common project infrastructures (access roads, irrigation channels etc.); and
  - iv. employment opportunities from common infrastructures works;
  - v. damaged property during construction works;
  - vi. exclusion in the census for PAPs; and
  - vii. any social other issue related to project intervention affecting the communities.
- d. Prepare a database for recording and keeping track of the grievances and how they were resolved. The database should be a living document, updated weekly. It should also record the status of each grievance (date opened/in-process/closed). Access to making entries into the database should be restricted to the implementation team, but the general community should be able to use Grievance Book/register to see the status of their complaints.
- e. Communicate the grievance procedure to the people, the process for recording their complaints and the timelines for redress. Communication should be done through a community meeting involving the resettled community. Pamphlets outlining the procedures and commitments of the grievance mechanism should be distributed to all households.
- f. Raise grievances at the regular implementation team meeting for discussion. Some resolutions will require coordination/ interaction with the local authorities, which the GO should follow up, while some would require intervention from the ministry.

Provide a regular update on the status of grievances via the database, including reasons for delay, if any. This update needs to be provided on a weekly basis. Also, clearly define grievances that will not be entertained by the GO. These could be related to issues other than those linked to the resettlement and rehabilitation process.

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### 5.4.3 CONTINGENT EMERGENCY RESPONSE

Over the last two decades, Uganda has observed a significant trend of increased exposure to disasters, in particular to floods, droughts, pest and diseases, and storms but also to other hazards<sup>13</sup>. Just within the last decade, the country experienced more than twice severe droughts, floods and pest infestations. These phenomena cause damages to and losses of lives, properties, infrastructure, and livelihoods; they impede and set back development efforts and divert development funds. Millions of dollars are spent to save lives and rehabilitate and recover people's livelihoods.

Climate change is already affecting water availability, quality and security across Uganda for both production and domestic use. In addition, the forecasted rise in temperature and rainfall variability due to climate change will adversely affect water resources and water-dependent sectors such as agriculture, livestock and energy. Rising temperatures will accelerate evapotranspiration and will decrease soil moisture, which will adversely impact agriculture production. Demand for water will continue increasing as a result of population growth, climate change and environmental degradation. Smallholder farmers will be particularly vulnerable to this competing demand for water as they rely on rain-fed agriculture and cannot afford irrigation infrastructure for their agricultural lands. The cattle corridor in particular faces a high-water stress as it naturally receives less rain; the carrying capacity of the rangelands is under critical pressure given the increasing levels of overgrazing and water scarcity. No doubt, the high hazard exposure coupled with low production levels threatens livelihood security of thousands of smallholder farmers in the country, particularly during and after the emergency period.

It is projected that climate change will exacerbate the frequency and intensity of droughts and floods in the region. In this regard, Contingency Emergency Response Component (CERC) is also an instrument for building resilience to climate change, through financing of the mitigation and recovery efforts. This contingency facility can be triggered through formal declaration of a national emergency by the government authority or a statement of facts from a designated authority in the government (statement of facts from the government to a declaration or action by a third party and upon a formal request from government of the participating country to the World Bank through the Ministry of Finance/National Treasury. In such cases, funds from other project components will be reallocated to finance emergency response expenditures to meet agricultural crises and emergency needs. The emergency response would include mitigation, recovery, and reconstruction following crises and disasters, such as severe droughts, floods, disease outbreaks, and landslides, among others.

In accordance with para 17 of the CERC Guidance Note, all activities financed through CERC are subject to World Bank safeguards policies. As such, the implementation of this component will follow a detailed Contingent Emergency Response Implementation Plan (CERIP), which is satisfactory to the World Bank to be prepared by MWE for each Eligible Crisis of Emergency during project implementation. The Project Operation Manual shall provide clear guidance on development and implementation of CERIP. The CERIP shall be developed in consultation with the responsible

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<sup>13</sup> MWE 2017: *Strategic Program for Climate Resilience for Uganda (Pilot Program for Climate Resilience)*.

Government Agencies, Development Partners and the affected/beneficiary Communities. The development of CERIP and POM shall use and apply the Environmental and Social Screening criteria included under this ESMF. CERIP shall among others include description of potential emergencies and the types of activities likely to be financed, evaluation of the potential risks and mitigation measures associated with them. It will also identify likely vulnerable locations and/or groups and include, where needed, some social assessment to guide emergency responses. The CERIP shall include the institutional arrangements for environmental and social due diligence and monitoring, any needed capacity-building measures, and generic guidance on emergency small-scale civil works.

Finally, the CERIP shall indicate which kinds of emergency response actions can proceed with no additional environmental or social assessment, and which ones would require assessment (and at what level) prior to being initiated. It may also identify trade-offs, where required short-term responses could create longer-term risks that need to be managed. On matters of emergencies, MWE will liaise with the Department for Disaster Preparedness in the Office of the Prime Minister in case of any such emergencies does arise.

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#### 5.4.4 PEST MANAGEMENT PLAN

The IDCRP aims to promote climate smart agriculture through the development of irrigation services hence making farmers less dependent on rain fed agricultural production. Irrigation services will be developed hand in hand with other support services for agricultural production. In view of the need to expand use of other production inputs (improved seeds, fertilizers, machineries) to increase yield, enhance diversification, and intensification; and of the opportunity of irrigation to become the anchor for the development of value chains and strong producer organizations. No doubt these interventions call for use of agro-chemicals hence the need for a Pest Management Plan to be in place. Its

*Sub-component 2.2 with a focus on Production and Productivity Improvement amongst others, envisages to facilitate access to inputs, promote good agricultural practices, sustainable land management practices, and integrated pests and disease management; and, (ii) matching grants to facilitate access to inputs (seeds, fertilizers, agro-chemicals). These interventions, trigger World Bank OP 4.09 Pesticides Management is triggered in terms of transportation, storage, application and management of obsolete agro-chemicals as such, a PMP is incorporated under Annex 8 of this ESMF. In terms of its implementation, MAAIF will be the focal point for implementation of the PMP and shall coordinate its implementation through a harmonized information management system, financial mechanism and a monitoring and evaluation framework. The Ministry will:*

- a. liaise with statutory bodies including Agricultural Chemicals Board (ACB), Uganda Revenue Authority (URA) and Uganda National Bureau of Standards (UNBS) to ensure that, agro-chemicals imported into the country will be those which are authorized and cleared for use;
- b. liaise with NEMA and Government Analytical Laboratories (GAL) to monitor pesticide contamination;
- c. through its inspectors monitor condition of pesticide storage and transport; and
- d. together with NAADS link-up with the district to collect empty pesticide containers.

In addition, all pesticide shops will be inspected regularly by MAAIF inspectors to ensure that they are registered or licensed by ACB and that they follow safety regulations. Inspectors will also be required to take samples of pesticides that are suspected of being adulterated.

Furthermore, the Ministry will collaborate with other stakeholder agencies as follows:

- a. Ministry of Water and Environment through its Water for Production Department will collaborate with GAL in monitoring pesticide contamination of water bodies;
- b. Ministry of Health through its Department of Environmental Health will be supported to collect and keep accurate statistics on pesticide poisonings events. In addition, it will create awareness raising actions that will target the different pesticide users in order to avoid such accidents and incidents;
- c. Role of NARO and its Research Institutes will coordinate all integrated agricultural research and development (R&D) activities required under the ICDRP. When pest problems occur that are novel or beyond the scope of NAADS in-house experts and the Uganda Cooperatives Development Alliance (UCDA) Extension Staff at the district level, advice will be obtained from NARO;
- d. National Environment Management Authority with its Monitoring and Compliance Department as well as Environmental Inspectors will be expected to ensure compliance with permits, standards, regulations and all approval conditions.
- e. Agricultural Chemicals Control Board (ACB), a statutory body established under the Agricultural Chemical Control Act 2006 and charged with overseeing, deciding or advising the Minister on the registration and control of agricultural chemicals and exercising responsibility for all policy matters affecting agricultural chemicals. It also issues permits to suitable and approved importers of agrochemicals as well as maintaining a Statistical Database of agro-chemicals;
- f. Uganda National Bureau of Standards (UNBS) is mandated to develop and promote standardization; quality assurance; laboratory testing as well as ensuring good quality of imports under the Import Inspection and Clearance Regulations 2002.
- g. Uganda National Agro-Input Dealers Association (UNADA): an umbrella organization for registration of agro-dealers amongst others, mobilizes its members for a pre-requisite certification training and examination organized by ACB.
- h. Role of NGOs: NGOs will be fully recognized and brought on board as serious partners in all efforts to ensure safe use of pesticides.



A preliminary evaluation of potential risks and mitigation measures associated with them, presented here below in Table 7.

**Table 10: Potential risks and mitigation measures associated with the project**

No.	Environmental/Social Issue	Mitigation Measures	Agency responsible for implementation of mitigation measures	Monitoring Indicators	Agency Responsible for Monitoring
<b>A.</b>	<b><i>Impacts relating to the development of multi-purpose irrigation facilities</i></b>				
01.	Envisaged involuntary resettlement risks	a. Operationalize provisions in the RPF b. Compensate PAPs	DfWP-MWE Contractors	PAPs established and compensation done.	MoLHUD
02.	Likely impacts on livelihoods	a. Timely accomplishing of works on schedule. b. Notification of PAPs on the works schedule. Compensation for loss of livelihood should be one of the measures to mitigate this impact.	DfWP-MWE Contractors	Works schedule in place	CDOs, DEOs MoLHUD DfWP-MWE
03.	Concerns over inadequate consultation of various stakeholders.	Stakeholder Engagement Plan preparation and implementation.	DfWP-MWE Contractors	SEP in place as well as its implementation schedule.	CDOs DEOs DfWP-MWE
04.	Labor influx related social risks.	a. Offer employment opportunities to locals. b. Labor management plans, code of conducts for workers, will mitigate this concern. c. Sensitization of communities on employment opportunities. Working with area security agencies to curb influx.	DfWP-MWE Contractors	Schedule for sensitization in place. Plans in place by security agencies on security in place.	CDOs, DEOs, MoGLSD
05.	Potential conflict over water usage.	a. Water Use Associations to put in measures to ensure	Department of Water for Production-MWE	Water use Associations in place and operational.	District and Dept. of Water for Production.

No.	Environmental/Social Issue	Mitigation Measures	Agency responsible for implementation of mitigation measures	Monitoring Indicators	Agency Responsible for Monitoring
		harmonious use of water in the project sites.			
06	Potential reduction in downstream flows.	a. MEF assessments undertaken; and b. Water needs established.	Department of Water for Production-MWE	a. Reports on MEF in place in the projects. b. Reports on water needs assessments for the sites established.	Dept. of Water for Production.
07.	Sedimentation and siltation of the water courses.	a. Restricting vegetation clearance to sites for project works; and b. Full sites restoration after works.	Department of Water for Production-MWE	a. Sites fully restored and re-vegetated after works.	Dept. of Water for Production, DEOs NEMA
08.	Security risks, thefts, and possible vandalism on project facilities and installations.	a. Instituting adequate security measures at the site i.e. recording visitors to the site, fencing off construction sites and collaboration with area local leaders.	a. Contractors b. Area local security agencies (police and LCs).	a. Measures for security instituted in the project (register for visitors, fencing of site etc.).	DEOs, CDOs, Probation Officers, MWE Safeguards Officials, Resident Engineers,
05.	HIV/AIDS risks.	a. Working areas HIV/AIDS service providers to conduct sensitization and awareness campaigns, issuing condoms and conducting VCT services.	Contractors, MWE Safeguards officials.	a. HIV/AIDS sensitization measures in place.	DEOs, CDOs, Probation Officers, MWE Safeguards Officials, Resident Engineers, MoGLSD
06.	Issues of child labor in rice irrigated fields.	a. Ensuring contractors do not employ children on the sites. b. WUA to check employment issues on the sites. c. District labor officers.	Contractors	a. Clear guide on recruitment of labor as per contractors' labor policy.	DEOs, CDOs, Probation Officers, MWE Safeguards Officials, Resident Engineers,
07.	Diseases incidences	WUA to sensitize communities on WASH	DEOs, Ministry of Water Engineers.	Plan for sensitization by the WUA on WASH	WUA, Public Health Officials, DEOs

No.	Environmental/Social Issue	Mitigation Measures	Agency responsible for implementation of mitigation measures	Monitoring Indicators	Agency Responsible for Monitoring
08.	Potential risks of bird conflicts.	Bird nuisance is anticipated from rice fields and sometimes farmers engage in poisoning of birds.	Farmers,		District Agricultural Officers, DEOs NEMA MoGLSD
<b>B.</b>	<b><i>Impacts relating to the construction of access roads</i></b>				
01.	Land uptake impacts	a. Compensation for any land uptake needs and construction materials.	MWE Engineers and Safeguards Staff, Contractors.	a. Road designs in place; b. PAPs details in place; and c. RAP process for compensation in place	DEOs and CDOs, MoLHUD
02.	Loss of roadside vegetation and crops.	a. Keep the road works within the existing alignment,	Contractors	a. Road designs in place b. Replanting to compensate for lost vegetation.	NEMA and DEOs
03.	Borrow pits related impacts.	a. Compensation of construction materials. b. Restoration of the sites after extraction of construction materials.	Contractors	a. Restoration plans in place, b. RAP process for compensation in place	NEMA and DEOs MoLHUD
<b>C.</b>	<b><i>Construction of offices blocks</i></b>				
01.	Loss of land to the office infrastructure.	a. Office structures to be built on Local Government owned lands;	a.	b. Evidence of land ownership in place; and	CDOs and DEOs.

No.	Environmental/Social Issue	Mitigation Measures	Agency responsible for implementation of mitigation measures	Monitoring Indicators	Agency Responsible for Monitoring
		b. Any risks of land take will be compensated as in RPF.		c. Compensation plan in place.	
02.	OSH issues	a. Providing workers with PPEs	Contractors	a. OSH plan for the project in place.	a. Contractor, b. Supervising Engineer c. Project Manager d. OHSD -MoGLSD
03.	Erosion on the site	a. Leveling and regressing of the site after works. b. Rainwater harvesting measures.	Contractors	a. Site restored b. Rain water harvesting facilities in place.	NEMA
04.	Management of construction waste	Routine removal of construction and demolition debris. Dumper trucks to have tarpaulins to cover the rubble.	Contractors	❖ Rubble readily and routinely transported outside the site. Dumper trucks with tarpaulins on.	❖ Contractor, ❖ Supervising Engineer ❖ Project Manager OHSD -MoGLSD

## 6 INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS

### 6.1 COORDINATION WITH OTHER GOVERNMENT AGENCIES

The following agencies will be responsible for delivery of the proposed project:

#### 6.1.1 MULTI-SECTORAL STEERING COMMITTEE

A multi-sectoral Steering Committee established under the project/programme will provide policy oversight of the project, review and approve annual work plans and budgets, and ensure adherence to relevant strategies established by Government during project implementation. The Permanent Secretary, MWE, will chair the Steering Committee. The membership of this committee will comprise Permanent Secretaries (or their representatives at high technical level) of the Ministries of Agriculture, Animal Industry and Fisheries (MAAIF); Gender, Labor and Social Development (MoGLSD); Finance, Planning and Economic Development (MoFPED), Trade, Industry and Cooperatives (MoTIC); Local Government (MoLG); and the Executive Director, NEMA; and Executive Secretary of the National Farmers' Federation; Chief Administrators of the districts where irrigation infrastructure activities will be implemented will also be members of the Steering Committee. The steering committee will meet every quarter to review progress of project implementation and perform other functions it will be mandated to undertake. The Water and Environment Sector Liaison Department (WESLD) will provide secretarial services to the Steering Committee and also ensure that background technical documents are prepared in advance for the guidance and consideration of the Steering Committee.

#### 6.1.2 MINISTRY OF WATER AND ENVIRONMENT

The Project's Executing Agency shall be the Ministry of Water and Environment (MWE) under arrangements for execution of similar projects/programmes. The MWE will also take lead on implementation of activities related to the integrated natural resources management and climate resilience, through the relevant departments of the Directorate of Environment Affairs and the Directorate of Water Resources Management by providing necessary technical and policy guidance to districts who will lead all processes of implementation.

##### 6.1.2.1 THE WATER AND ENVIRONMENT SECTOR LIAISON DEPARTMENT-WESLD

The WESLD, an integral part of the Executing Agency under the direction and supervision of the Ministry of Water and Environment, will coordinate implementation of activities of the programme with the addition of the necessary skill mix including a Project Accountant, Monitoring and Evaluation (M&E) Specialist, Procurement Specialist, an Agri-business Development Specialist. The liaison and coordination of project implementation will be supported by the technical staff in the Ministries involved in the implementation to complement its work.

The WESLD will ensure that Project activities are initiated and are adequately budgeted for, consolidate project records, submit all procurement documents to the Bank for review and approval; compile and submit all disbursement applications and quarterly progress reports; coordinate annual audits of all Project accounts and facilitate submission of audit reports to the Bank.

##### 6.1.2.2 WATER MANAGEMENT ZONES-WMZS

Uganda is divided into regional water management zones (WMZs)/major hydrological basins comprising Lake Victoria, Lake Kyoga, Lake Albert and Upper Nile. These are further delineated into smaller catchments. The water management zones provide a framework for addressing climate change effects in an integrated manner as they are managed through a multi-stakeholder consultative approach. The WMZs are advancing integrated catchment management planning through multi-sectoral and broad bottom-top stakeholder engagement in identification, prioritization and addressing of shared catchment problems. They provide a good entry point for piloting, testing and scaling up best practices in sustainable land and water management, as a means of reducing catchment and natural resource degradation whilst improving local community livelihoods.

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#### 6.1.2.3 WATER FOR PRODUCTION REGIONAL CENTRES

The Ministry's Water for Production Regional Centers particularly in the west and east centers shall oversee implementation of the project in the respective areas including responsibility for stakeholder engagement, training, technical supervision, monitoring, and performance evaluation.

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#### 6.1.2.4 WATER USER ASSOCIATIONS

Section 51 of the Water Act 1999 provides for the formation of water use and sanitation committees/committees which are to operate under the direction of the Director of the Directorate of Water Development (DWD). At the local levels, local authorities may organize the formation of water user groups and associations within their jurisdiction. Ideally, the community is required by law to form WUCs to manage, operate and maintain point water sources. This is meant to make and to allow the community to identify and solve their own WASH problems. However it is established that, WUCs function poorly<sup>14</sup> due to lack of participation from within the community and by WUC members. A consequence of the low participation rate is an inability to raise funds to maintain water supply services.

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#### 6.1.3 MINISTRY OF AGRICULTURE, ANIMAL INDUSTRY AND FISHERIES

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) will be a key implementing partner of the Project's activities that fall within their mandate. Similarly, MAAIF will be responsible for implementation processes for the agri-business development component with the respective districts taking lead in implementation of their respective activities. They will also support the irrigation su-component.

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#### 6.1.4 MINISTRY OF TRADE, INDUSTRY AND CO-OPERATIVES

Ministry of Trade, Industry and Co-operatives (MoTIC) is responsible amongst others, for developing, coordinating, regulating, promoting and facilitating domestic and external trade with emphasis on value addition drives in the project as well as export promotion and access to regional and international markets for the commodities under this project.

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#### 6.1.5 MINISTRY OF GENDER, LABOUR AND SOCIAL DEVELOPMENT

The mandate of the Ministry is to empower citizens to maximize their individual and collective potential by developing skills, increasing labor productivity, and cultural enrichment to achieve sustainable and gender-

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<sup>14</sup>Skinner 2013: *Improving the Effectiveness of Water Use Associations: The Case for Uganda*.

sensitive development. With reference to the project, the Ministry will be key on supervision of mainstreaming issues of gender, OHS, HIV/AIDS and issues of child labor as well as employment issues in the project.

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#### 6.1.6 NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

The role of NEMA in the project will be to review and approve Environmental Assessments and Project Briefs as well as monitoring records submitted in accordance with the National Environment Act and its respective regulations.

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#### 6.1.7 DISTRICT IMPLEMENTATION FRAMEWORK

Each District will designate a Project Support Officer (PSO) among its staff, who will head the District Technical Support Team composed of District Engineer, District Water Officer, District Environmental Officer, District Wetlands Officer, District Agricultural Officer, District Natural Resources Officer and Community Development Officer to support the implementation and technical supervision of the Project, including sensitization of farmers, training, and monitoring and evaluation in the respective local governments.

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#### 6.1.8 ROLES OF THE CONTRACTORS DURING PROJECT IMPLEMENTATION

All contractors hired to undertake project civil works shall be required to develop a Contractor's ESMP which will include among others the following aspects: the initial sub-project ESIA approved by both NEMA and World Bank, Health and Safety Management Plan, Traffic Management Plan, Waste Management Plan, Construction Camp and Equipment Yard Management Plan, Labor Force Management Plan which shall also include Code of Conduct for Workers, Construction Materials Acquisition Due Diligence Procedure, etc. The Contractors shall hire the following key staff to undertake project implementation: Project Manager, Environmental Specialist, Sociologist, Health and Safety Officer.

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#### 6.1.9 ROLE OF THE SUPERVISING CONSULTANT

The Engineer/Supervising Consultant will be responsible for the technical and contractual implementation of the works to be undertaken. The responsibilities of the Engineer/Supervising Consultant will include:

- a. Ensure that, the requirements as set out in the ESMP and any other conditions stipulated by the relevant Authorities are implemented;
- b. Assist the Contractor in ensuring that the conditions for ESMP are adhered to and promptly issue instructions to the Contractor;
- c. Support the Contractor in the preparation of monthly site meetings and that, such meetings have their agenda embody aspects of environmental and social compliance;
- d. Review and approve work method statements by the contractor to ensure environmental and social safeguards are fully addressed in works to be undertaken.

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### 6.2 CAPACITY BUILDING, TRAINING AND TECHNICAL ASSISTANCE

The goal of the IDCRP is to the maximum extent possible utilize existing institutional structures and capacity within the MWE and MAAIF to implement the Project. To successfully implement the recommendations in this ESMF, it is important to ensure that key stakeholders who have a role in implementing the ESMF have basic framework for their operations and involvement in the IDCRP.

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#### 6.2.1 INSTITUTIONAL ARRANGEMENT FOR SAFEGUARDS MANAGEMENT IN IDCRP

As indicated above, the Department of Water for Production which is the Implementing Unit has within the Ministry establishment, 3N°. Regional Centers i.e. northern, eastern and western as well as an Environment Officer who are all responsible for oversight role on environmental and social safeguards issues in the Department interventions. It important to note that, the key responsibility of the sociologists whose key role is mobilization of the communities and within these, the centers are stationed environmental and social safeguards whose primary role is mobilization and sensitization of the communities to participate in project interventions in their areas of jurisdiction.

In addition, within the Ministry and in particular, the Urban Water Supply and Sewerage Department has also two safeguards officers with whom, the Environment Officer in the Department of Water for Production works closely with on matters of safeguards mainstreaming and management in the two Departments. Furthermore, there are a number of sociologists on some of the projects in the Ministry who manage mainly, community mobilization and sensitization in the projects. It is therefore proposed that, the existing staff levels in the Ministry are able to address environmental and social safeguards in the Ministry's portfolio and could be supported in terms of short-term specialized trainings in areas such as climate change mainstreaming, equipment provision and facilitation for field supervision. if their functioning can be supported.

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#### 6.2.2 CAPACITY BUILDING AND TRAINING

#### 6.2.3 CAPACITY BUILDING AND TRAINING

Despite there being adequate staff to handle environmental and social safeguards in the Department and in the IDCRP, there is need to augment that potential through tailor-made trainings and provision of equipment-based support in-terms of computers and transport. There is need to build the safeguards capacity in terms of:

- a. Provision of equipment and transport to facilitate supervision and monitoring of field projects;
- b. Work based support to enhance timely reporting;
- c. Tailor-made training to orientate the sociologists to have basics of environmental and social safeguards monitoring and reporting;
- d. Development and implementation ESIA's;
- e. Management and reporting on environmental and social aspects in projects;
- f. HIV/AIDS, GBV/SEA, and gender mainstreaming in projects and reporting on such themes;
- g. Management of involuntary processes in projects;
- h. Employment and labor engagement processes;
- i. GRM issues in the projects and their resolution mechanisms; and
- j. Implementation of ESMPs.

IDCRP

### 6.3 ESMF BUDGET AND DISCLOSURE

#### 6.3.1 ESMF BUDGET

Financial resources are required to support implementation of this ESMF based on estimates summarized on Table 8. However, the final costs will be confirmed during project appraisal.



**Table 11: Indicative ESMF Budget for IDCRP implementation**

Nº.	Item/Activity	Cost USD
01.	Mobilization and sensitization of the communities and participating farmers especially in Nyimur Multi-purpose project.	55,000
02.	Training and training beneficiaries on safeguards under Component 2	35,000
03.	Mobilization and training in environmental and social safeguards requirements for Technical staff of Department of Water for Production in MWE.	15,000.00
04.	Building the capacity of Department to institutionalize safeguards management (specialized short-term trainings, transport 04No. Double Cain Pick-up)	150,000.00
05.	Facilitation of Districts Local Governments to mobilize farmers, create awareness and provide technical guidance during development of irrigation facilities.	45,000.00
06.	Environmental and social safeguards monitoring and reporting	220,000.00
07.	Environmental Screening and Preparation of ESIA, ESMPs and related safeguard management plans for investments funded from component 1	420,000.00
08.	Environmental and Social Audits for projects investments in the target areas.	360,000.00
<b>Total Budget Estimate for ESMF Implementation</b>		<b>1,300,000.00</b>

### 6.3.2 ESMF DISCLOSURE

This ESMF will be disclosed in compliance with relevant Ugandan regulations and the World Bank Operational Policies. At the national level, once the ESMF is finalized, MWE will submit it to the World Bank for their review, clearance and disclosure in their website and Government's disclosure in the print media. MWE will upload the ESMF and other safeguards for the project onto its website <https://www.mowe.go.ug/> and invite the public to access and review the documents. The Ministry will also provide copies of the ESMF and RPF safeguards documents in the project to the public in its public libraries in its research institutes who will be participating in the project. The ESMF and the RPF alongside other safeguards documents will be disclosed at the World Bank's website and made available to any interested persons for public access and for public information and comments/feedback as will be necessary. Implementation and Institutional capacity for safeguard management in the project.

## 7.1 ANNEX 1: SUMMARY OF STAKEHOLDER CONSULTATIONS

**Consultation proceedings for IDCRP in Matanda/Enengo, Kanungu District**

<b>Date of meeting</b>	6 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Kanungu District Head quarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Courtesy Visit to the CAO, Mr. Begumya Eliab.
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<b>Introduction</b> The Team Leader introduced his team and then explained the assignment, the significance of the meeting.
<b>2.</b>	<b>Discussion</b> <b>Are you aware of the intended Irrigation development project in Matanda/Enengo, if yes, how do you perceive it?</b> Yes and as a matter of fact I'm in great support of its implementation considering that farmers not only in Matanda/Enengo depend on rainfall so much for crop production. If the Irrigation scheme is put in place, farmers will be to grow crops and produce food all year round.  However, for this project to be successful, it should be inclined toward communalism since communities in the area live and operate on clan-based groups and they are strongly attached to each other. It is due to this cohesion that they are able to provide labor to each other for all agricultural activities such as planting, weeding and harvesting.  Farmers face a challenge of animal encroachment on their farm lands which do not only eat the crops but also trample over them. These animals include Elephants, buffalos and baboons.  There are a lot of "fake" or poor-quality seeds and seedlings on the market lately which greatly impacts the crop yield, it is therefore important that institutions in charge allow only quality viable seeds on the market for the farmers.  Finally, farmers should be trained and encouraged to participate in production of different crop types, the trend of finding all farmers growing one type of crop like maize at ago should be stopped hence farmers will have ready market for their produce.
<b>Date of meeting</b>	6 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Kanungu District Head quarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the District Community Development Officer (DCDO), Mr. Namara Christopher
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<b>Introduction</b> After introducing the team members, the Team Leader explained the assignment, the reason why discussing with him concerns pertaining the irrigation development project is of significance toward its implementation.
<b>2.</b>	<b>Discussion</b> <b>What are the major livelihoods activities people engage in?</b>

<p>Agriculture production is the leading source of livelihood to the communities and the district at large. All people of different age groups that is; men, women and the youths are actively involved in agriculture production though Crop production is more practiced than livestock rearing.</p> <p><b>Any challenges affecting agriculture production?</b></p> <ol style="list-style-type: none"> <li>Unreliable rainfall patterns yet farmers depend on these seasons for cultivation and crop production.</li> <li>Land fragmentation limits productivity.</li> <li>Reduced market prices for agricultural produce.</li> <li>Traditional methods of farming such as use rudimentary tools of hoes and pangas.</li> </ol> <p><b>Do you see the irrigation development project in Matanda/Enengo overcoming some of these challenges?</b></p> <p>The irrigation development project will provide constant supply of water to agricultural fields and livestock. This will cause a positive shift from rainfall dependency causing farmers to produce unlimitedly.</p> <p><b>What would you like the project to take into consideration for it to be successful?</b></p> <p>MWE should provide an implementation/operational manual/guideline for the construction and management of the scheme.</p> <p>Collaborative measures amongst Local Government structures; Water technical services, Community development and Environment departments all geared toward the main objective of the project.</p>	
<b>Date of meeting</b>	6 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Matanda Project site
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the District Agricultural Engineer Mr. Politique Emanuele and Kihhi Sub-county Chief.
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<p><b>Introduction</b></p> <p>The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their concepts and perspectives of the irrigation development project.</p>
<b>2.</b>	<p><b>Issues discussed</b></p> <p><b>What is the estimated project command area and where from will the water be extracted?</b></p> <p>The irrigation development project is envisioned to cover an area of 800 acres. Matanda is the downstream, Enengo upstream. Water will be sourced from R. Mitano and the studies carried out so far indicate that the supply is adequate.</p> <p><b>What is the nature of land tenure system in place?</b></p> <p>All the 800 acres belong to Government of Uganda, however 100 acres is for the Police with a small fraction housing the Refugee transit site and another 100 acres for Rushorooza Seed secondary school. Farmers are able to hire and cultivate on this land upon agreement with the Sub-county.</p> <p><b>What are the most crops grown and animals reared in the project area?</b></p> <p>Food Crops include; maize, cassava, beans, sorghum, g.nuts</p> <p>Cash crops: Coffee, and tea</p> <p>Vegetables: cabbages, tomatoes, pepper, and</p> <p>Fruits: water melon, mangoes, avocado and jack fruit.</p> <p>Animals include; cows, Poultry, piggery, goats and some fish farming</p>

<p><b>What are the major challenges faced by farmers during agriculture production?</b></p> <ol style="list-style-type: none"> <li>Matanda is quite dry, the soils are sandy loam in nature therefore susceptible to leaching.</li> <li>Land degradation knowingly and unknowingly by practicing poor methods of farming which lead to nutrient depletion.</li> <li>Unpredictable changes in climatic patterns which leads to less output in terms of harvest.</li> <li>Soil erosion, considering that the nature of the terrain is generally steep hence vulnerable to erosion and mudslides.</li> <li>Inadequate land for cultivation which pushes communities to cultivate in swamps and river banks.</li> </ol> <p>However, with this irrigation scheme we will be assured of increased productivity and reduced famine as farmers don't have to depend entirely on the rainfall seasons.</p> <p><b>Are there any measures farmers should undertake to ensure IDCRP is of more benefit to them?</b></p> <p>Yes, farmers should embrace the practice of diversified agriculture and stop producing one similar crop per season. At least each group or individual should grow a crop different from the rest, in that way, there is steady market. For example, the reason why Maize prices have dropped so much to as low as 150/= per kilo is because farmer produced maize leading to increased supply and then fall in demand.</p> <p>Communities should form water user committees or management schemes to ensure the scheme performs its intended purpose and is kept functional always.</p> <p>Farmers have to adjust to patterns of other crops which they haven't been planting. They have to undertake background and check and grow crops that are quite profitable on the national scale.</p> <p>Post- harvest preservation methods are still inadequate, this is one of the reasons why farmers rash to sell off their produce even at extremely low prices. Since the scheme will boast productivity, farmers should be ready with measures to store their produce until they meet reasonable demand.</p> <p><b>What negative concerns are likely to emerge as a result of this irrigation development project?</b></p> <ol style="list-style-type: none"> <li>Increased land conflicts and disagreements; many farmers will want more land and it will be difficult for the issuing body to allocate land properly and equally.</li> <li>Increased influx of people in the area which can cause social disorder.</li> <li>Overproduction with no matching market.</li> </ol>	
<b>Date of meeting</b>	6 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Kihihi Sub-county Headquarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the Farmers of Kayembe, Kiruruma, Matanda and Kabuga.
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<b>Introduction</b> The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their concepts and perspectives of the irrigation development project.
<b>2.</b>	<b>Discussion</b> <b>After taking the farmers through the project concept and describing the detail of the project components, they were asked how the project will contribute positively and negatively to their development, more so livelihood. Below are their excerpts;</b>  <b>Project benefits</b> a. Reduced famine; we will be able to grow crops and have enough to feed the children.

<ul style="list-style-type: none"> <li>b. We will be able to plan our farming and produce unlimitedly.</li> <li>c. The scheme will be a tourist attraction itself and a model scheme for other areas</li> </ul> <p><b>Negative impacts</b></p> <ul style="list-style-type: none"> <li>a. Increased inflow of people in the project area which leads social disorder, theft, increased prostitution, disruption of cultures and the like.</li> <li>b. Flooding of the water which can spoil crops</li> <li>c. Increased diseases resulting from stagnant water such as malaria</li> <li>d. Land disagreements resulting from uneven distribution of land for irrigation.</li> </ul> <p><b>Despite the above project related benefits and negative impacts, the group had the following concerns;</b></p> <ul style="list-style-type: none"> <li>a. The irrigation system has to be well constructed to rule out operation failures that can be disastrous to people’s farmlands.</li> <li>b. Whether the irrigation scheme will be free of charge or for paying to access</li> <li>c. Will there be compensation in case some project infrastructure is to be located on individual land?</li> <li>d. How possible will it be for people outside the command area to benefit from the project?</li> <li>e. Future possibility of extending the project to include other areas not considered now.</li> <li>f. Failure to get market their produce.</li> <li>g. Limited knowledge on the use of agrochemicals especially pesticides and fertilizers.</li> <li>h. Hiring unskilled people from outside the project area during construction of project components yet the local residents can do the same kind of work.</li> </ul>	
<b>Date of meeting</b>	7 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Kabuyanda Town Council Office
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the; Mayor, Ass. Town Clerk, CDO, GISO, Ass. District Engineer, Agricultural Engineer(Town Council)
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<b>Introduction</b> The team leader introduced the team, explained the assignment and justified the reason for the meeting officials for Kabuyanda Town Council as one of the Project beneficiary.
<b>2.</b>	<b>Issues discussed</b> The Kabuyanda Town Council Team was asked where they are aware of the Kabuyanda Irrigation development and Climate resilience project to which they responded positively and indicated they have also informed local communities to embrace the development  <b>What is the land tenure in the district and specifically in Kabuyanda project area?</b> The biggest portion of land is owned privately by individuals and a few people own land under lease hold arrangements. Most of the land that is about 90% for the project development belongs to Government through NFA and is currently planted with Pine forest. The rest of the land belongs to communities.  <b>Do you see this irrigation scheme as a feasible one and at that very beneficial?</b> The irrigation project is of great value in Kabuyanda, people cry of reduced crop yields caused by water scarcity. All you well know, Isingiro was hit by serious drought and suffered a great famine that we had to seek for assistance from Office of Prime minister (OPM) last year2017. Kabunyanda is the district’s food basket but most of the farmers have abandoned the foods they used to grow because of climate change, foods such as sugar cane and greens are no longer available in the region.

	<p>This irrigation project will restore Kabuyanda’s production potential to meet the high demand. People will be able to cultivate beyond home consumption. The empty coffee stores will be full again.</p> <p><b>What are the most grown crops?</b> Matoke, Coffee, Irish, Maize, beans and sorghum.</p> <p><b>Animals</b> Cows (both local and mixed hybrid), pigs, goats, poultry and rabbits</p> <p><b>What environmental risks will likely result from the implementation of the irrigation scheme?</b></p> <ol style="list-style-type: none"> <li>Cutting down of trees in areas intended for construction of project components</li> <li>Flash floods once the project is operational</li> <li>Increased outbreak of diseases especially malaria</li> <li>Accidents and injuries during construction</li> </ol> <p><b>Can you share your expectations both on the positive and negative sides</b></p> <p><b>Positive</b></p> <ol style="list-style-type: none"> <li>Improved road access</li> <li>Increased coffee production e</li> <li>Extension of power to the site area</li> <li>Employment opportunities</li> <li>Induced development attracting more investments and factories</li> <li>Better standards of living as a result of increased household income</li> </ol> <p><b>Negative effects of the Irrigation project</b></p> <ol style="list-style-type: none"> <li>Change of land use</li> <li>Displacement of people and relocation of roads</li> <li>Reduced land for cultivation</li> <li>Increased population and migration effects of increased violence, fights and disagreements</li> <li>Spread of diseases brought about by the non-native people</li> </ol> <p><b>Are there any areas with unique environmental features or cultural importance?</b> No.</p> <p><b>What good practices should be encouraged to ensure safe and smooth implementation and operation of the scheme</b></p> <ol style="list-style-type: none"> <li>Component of sensitizing the masses about the project</li> <li>Educating communities about project benefits</li> <li>Establish a central tree nursery bed for catchment protection</li> </ol>
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### Consulted proceedings for IDCRP for Kabuyanda site, Isingiro District

<b>Date of meeting</b>	7 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Isingiro District Head quarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the Ass. CAO, Mr. Gumisiriza Aloysius
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<b>Introduction</b> The team leader introduced the team, explained the assignment and informed the assistant CAO why he and the other project relevant officials at the district level have to be met.
<b>2.</b>	<b>Discussion</b>

	<p>Mr. Gumisiriza informed the project Team that they are grateful MWE has considered Kabuyanda which is a significant production contributor to Isingiro district. He informed that team that they are willing to give all the support needed to ensure the project commences.</p> <p>Asked of the challenges they face towards the same projects, he pointed that adequate sensitization of the communities is paramount lest the project will be abused.</p>
<b>Date of meeting</b>	7 <sup>th</sup> August 2018
<b>Place of Meeting</b>	Isingiro District Headquarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the District Agricultural Officer, Mr. Tumwesigye Patrick
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<p><b>Introduction</b></p> <p>The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture his concerns and opinion for the irrigation development project.</p>
<b>2.</b>	<p><b>Discussion</b></p> <p>The DAE notified the team that he participated in the Feasibility study for the Kabuyanda IDCRP. For successful implementation of the project, he said that there is need for in depth mobilization and sensitization at all levels of Village and Sub-county and involvement of all stakeholders.</p> <p><b>How do you intend to engage and encourage famers to fully participate and own the project since they are the primary beneficiaries?</b></p> <p>By promoting growing of crops that have not been mostly grown such as horticulture, growing of more vegetables and fruits especially, mangoes, avocado and oranges. Vegetables to be seriously considered include cabbage, Green pepper, carrots, greens and Red pepper (Chilli).</p> <p><b>In what ways do will this project contribute to agriculture;</b></p> <p>Land for agriculture is owned by families though on small scale, therefore there has to be maximum output in order to meet family needs; the irrigation project will definitely enhance productivity.</p> <p>Through irrigation, there will be promotion of production of crops not previously grown such as rice and pasture establishment for dairy farming and piggery.</p>
<b>Date of meeting</b>	7 <sup>th</sup> August 2018
<b>Place of Meeting</b>	Isingiro District Headquarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the DNRO/SEO, Mr. Bwengye Emmanuel and DEO, Mr. Kamoga Abdu
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<p><b>Introduction</b></p> <p>The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their views and perspectives of the irrigation development project.</p>
<b>2.</b>	<b>Discussion</b>

<p><b>Do you have any weather stations at / within the district, what is the Climate of the area and are there any significant changes in this climate?</b></p> <p>There is a weather station at the district under the management of UNMA. There are two recognized rainy seasons; Feb –May and Sep -Dec with the latter being more reliable. However, lately the Feb-April rainy season was higher than the normal which explains the high maize yields causing the drastic reduction for maize purchase. On this note, dry spells are longer and life threatening even to livestock. Other effects of climate change such as frequent occurrences of earth quakes, invasion of pest especially aphids on Eucalyptus are becoming more common and tend to intensify in hot conditions.</p> <p><b>What are the environmental risks associated with implementation of the irrigation development project?</b></p> <ol style="list-style-type: none"> <li>1) Reduction of land cover/ vegetation especially trees will be cut for site construction</li> <li>2) Improper waste management</li> <li>3) Use of agrochemicals and their subsequent disposal</li> <li>4) Accidents due to over flow and floods</li> <li>5) Reduction in water levels down stream</li> </ol> <p><b>How do we overcome the above risks?</b></p> <ol style="list-style-type: none"> <li>1) Undertake Water catchment protection activities such river bank stabilization and reforestation.</li> <li>2) Enrichment planting of trees to enhance underground recharge and flow of water</li> <li>3) The district should gazette an appropriate waste dumping site, a composting plant and a recycling plant.</li> </ol>	
<b>Date of meeting</b>	7 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Kabuyanda Sub-county Head quarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the LCIII Chairman (Mr. Byensi Justus) and his Vice (Mrs. Kedress Ategyereize)
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<b>Introduction</b> The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their concepts and perspectives of the irrigation development project.
<b>2.</b>	<b>Discussion</b> They were asked if they knew about the project and to which they said they have heard so much that they are only waiting for it to start. Asked how ready they are, they responded that the sub-county has a lot of undeveloped land unto which the workers camps can be constructed.
<b>Date of meeting</b>	7 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Kagoto Village Centre
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the residents of Kagoto village, Nyamiyaga, and Kanywamaizi
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<b>Introduction</b>



	The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their concepts and perspectives of the irrigation development project.
<b>2.</b>	<b>Discussion</b>
	<p><b>The team leader explained to the residents gathered the detail of the project, its planned components and the target areas. Then they were asked how the project will contribute positively and negatively to their development, more so their livelihood. They raised the following points;</b></p> <p><b>Project benefits</b></p> <ol style="list-style-type: none"> <li>1) The Irrigation scheme will be the first of the kind in the whole district hence will act as study area for students and a model standard for other farmers</li> <li>2) There will be more production, farmers will not limited by the two rainy seasons and this will contribute significantly to our standard way of living</li> <li>3) Development of other sectors like factories for coffee and banana processing</li> <li>4) General development of the project region</li> <li>5) Provision of adequate water supply for crops and animals</li> </ol> <p><b>Concerns raised</b></p> <ol style="list-style-type: none"> <li>1) Destruction of people's crops during project implementation</li> <li>2) The dam site has to be fenced off to prevent access by unauthorized persons</li> <li>3) Diseases due to increased surface of stagnant water</li> <li>4) Will the scheme be free of any charges?</li> <li>5) Labor influx into the project area</li> <li>6) Increase in theft cases as a result of development</li> <li>7) Social distractions</li> <li>8) Hiring foreign labour at the expense of local residents</li> <li>9) Decrease in water levels in the catchment</li> <li>10) Accidents resulting from failure of the scheme such as outbursts, pipe blockage, and spillage of water.</li> </ol>

### Consultation record for the Amagoro IDCRP in Tororo District


<b>Date of meeting</b>	9 <sup>th</sup> August 2018
<b>Place of Meeting</b>	At Magola Sub-County offices
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the LCIII Chairman, Mr. Ogwang Willy Obbo and CDO, Mr. Othieno Jackson
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<p><b>Introduction</b></p> <p>The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their concepts and perspectives of the irrigation development project.</p>
<b>2.</b>	<p><b>Discussion</b></p> <p><b>What are the most common crops grown?</b> Maize, cassava, beans, millet, rice, peas (both green and cow peas) sorghum, sweet potatoes and soya.</p> <p><b>What will be the benefits of the irrigation scheme?</b></p> <ol style="list-style-type: none"> <li>1) Farmers will longer be affected by change in weather patterns</li> </ol>

	<p>2) High productivity of both crops and animals; animals reared include cows, goats, sheep, turkeys and chicken</p> <p>3) The scheme will be a Centre of collection thus bringing a sense of togetherness and collaboration</p>
<b>Date of meeting</b>	9 <sup>th</sup> August 2018
<b>Place of Meeting</b>	In Malawa B Village
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the residents of Malawa and Magola, The LCIII chairman and CDO
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<p><b>Introduction</b></p> <p>The team leader introduced the team, then explained to the communities the Amagoro Irrigation development and Climate resilience project, the its components and informed them that they are the primary beneficiaries of the irrigation scheme.</p>
<b>2.</b>	<p><b>Discussion</b></p> <p>They raised a concern of land insecurity arguing that their land is going to be grabbed by the “so called rich” or government in the name of developing it leaving them landless, this concern was adequately addressed by LCIII Chairman Mr. Ogwang Willy Obbo and CDO, Mr. Othieno Jackson.</p> <p>The communities understood the project and presented their need for the project saying they entirely depend on agriculture which is affected by unpredictable rainfall patterns.</p> <p>They said that the irrigation scheme will enable them grow and produce crops even during the dry seasons hence they will be able to eradicate poverty.</p> <p>They further indicated that the construction of the scheme will grant the employment opportunities thereby uplifting their standard of living.</p>
<b>Date of meeting</b>	10 <sup>th</sup> August 2018
<b>Place of Meeting</b>	Tororo District Headquarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam
<b>Subject of meeting</b>	Consultative meeting with the CAO, Mr. Balaba Danstern
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<p><b>Introduction</b></p> <p>The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their concepts and perspectives of the irrigation development project.</p>
<b>2.</b>	<p><b>Discussion</b></p> <p>CAO was interested in knowing the following;</p> <p>a) <b>The number of target farmers?</b></p> <p>b) <b>The extent the irrigation is expected to cover in terms of acreage?</b></p> <p><b>He concluded by emphasizing the need for collaborative measures between MWE and MAAIF</b></p>
<b>Date of meeting</b>	10 <sup>th</sup> August 2018
<b>Place of Meeting</b>	Tororo District head quarters
<b>Meeting proceedings recorded by</b>	Muheki Mariam

<b>Subject of meeting</b>	Consultative meeting with the District Production Officer, Mr. Okware Patrick
<b>Item</b>	<b>Summary of Proceedings</b>
<b>1.</b>	<p><b>Introduction</b></p> <p>The team leader introduced the team, explained the assignment and justified the reason for the meeting to capture their concepts and perspectives of the irrigation development project.</p>
<b>2.</b>	<p><b>Discussion</b></p> <p>When asked about the project benefits, he said Climate change is real so the scheme will be an intervention to the district. More agricultural produce is expected when the scheme is in place. This in turn calls us to have ready market for the produced foods and animals least they will get spoilt.</p>
	<p><b>Are there other irrigation schemes in the district?</b></p> <p>The only existing small irrigation scheme in Kwapa-Kabosa is no longer functional. He strongly recommended for institution of committees to manage the implementation and operation of the project to ensure its sustainability.</p>

7.2 ANNEX 2: LISTS OF ATTENDANCE DURING CONSULTATIONS MEETINGS

Block 219 Plot 046, Najjera 1, Kira  
 P.O. Box 28434, Kampala, Uganda  
 +256 - 772 - 458903 / 772-437172  
 info@jbn.co.ug | www.jbn.co.ug


**JBN** consultants & planners

**ATTENDANCE LIST**  
 Project Name: *Integration development and Client Relations Project*  
 Location: *Karungu District* Date: *6/08/18*


Sl no	Name	Designation	Contact	Email	Signature
1.	<i>Begumyir N. Gribb</i>	<i>CEO</i>	<i>0772629197</i>	<i>begumyir2016@gmail.com</i>	<i>[Signature]</i>
2.	<i>Namara Chudde</i>	<i>DCO</i>	<i>0772514886</i>	<i>chudde@karungu.gov.ug</i>	<i>[Signature]</i>
3.	<i>Buhiga JB Emmanuel</i>	<i>SAE</i>	<i>077240202</i>	<i>jbuhiga@karungu.gov.ug</i>	<i>[Signature]</i>
4.					
5.					
6.					
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8.					
9.					
10.					

**ATTENDANCE LIST**

Project Name: ESMF for irrigation development

Date: 6/05/2018

Location: MATANDA (KAMUNGU) 3, KIHITI SIC HOUBAIBER

Sl no	Name	Designation	Contact	Email	Signature
1.	MASDOLA SIKATE KAYEMBE	HEAD TEACHER	0772844 2038	masoolasi.roje@ yahoob.com	
2.	NINSIMA M. SABA	VOICFC PERSON KAYEMBE	0774154557		NINSIMA
3.	KAMUNGU	KAYEMBE	077204585		KAMUNGU
4.	Bahati Pafura	Kayembe	0727273610		BAHATI P.
5.	Kwesiga Pelte	Kayembe	0786660022		PELTI
6.	Asimwe Hope	Kayembe			HOPE
7.	Matsiko Kagifa	Kayembe	0782006076		KASIKO
8.	Kanshakama Mwig	Kayembe			MWIG
9.	Kwehangyana Alice	Kayembe	0788151797		KWANGYANA
10.	Komuhangi Patricia Asimwe Grace Matanda I	Kayembe	078404589		PERSONIA ATACE

**ATTENDANCE LIST**

Project Name: Irrigation development and climate change resilience project

Date: 6/08/2018

Location: Kibi: S/C, Hoopshanku

Sl no	Name	Designation	Contact	Email	Signature
1.	Sentevoza Gad Kayembe				Sentevoza
2.	Tumusiime Patricia Kabuga				Tumusiime Patricia
3.	Muhwezi Resta Kayembe				MR
4.	Byomugaba Mauda Kiruruma				
5.	Atabwe Grace Kiruruma				
6.	Kembabazi C Kayembe				Kembabazi C
7.	Monic Katabazi Mataradai				Monic
8.	Tumusiime Kemigisha Hope Kayembe				FTU musime
9.	Mizius Byomukanyi Kabuga		070866768		Mizius
10.	Barinaba Bernard Kayembe		072026108		Barinaba

Byomukanyi Mataradai

078749301

**ATTENDANCE LIST**

Project Name: *Insights development and climate change resilience project*

Date: *06/08/2018*

Location: *Kibiside tr.*

Sl no	Name	Designation	Contact	Email	Signature
1.	<i>Kyamuhanda Olivia</i>	<i>Kayembe</i>	<i>0771670205</i>		<i>[Signature]</i>
2.	<i>Kyabikire Clare</i>	<i>Kayembe</i>	<i>0785329309</i>		<i>Kellen</i>
3.	<i>Chance Betty</i>	<i>Kayembe</i>	<i>0783160354</i>		<i>chance</i>
4.	<i>Kwizera Obed</i>	<i>Kiruruma</i>	<i>0787202055</i>		<i>[Signature]</i>
5.	<i>Rusimbo Wilber</i>	<i>Kayembe</i>	<i>079329515</i>		<i>[Signature]</i>
6.	<i>Mbabazi God</i>	<i>Kiruruma</i>	<i>0780682319</i>	<i>godbabazi@gmail.com</i>	<i>[Signature]</i>
7.	<i>Allen Mgobara</i>	<i>Kabuga</i>	<i>0773205678</i>		<i>Allen</i>
8.	<i>Kansiima Anet</i>	<i>Kayembe</i>	<i>0782460755</i>		<i>Kansiima</i>
9.	<i>Turamushabali</i>	<i>Kayembe</i>			<i>[Signature]</i>
10.	<i>Kyabukire Meziel</i>	<i>Kayembe</i>	<i>0777732567</i>		<i>Meziel</i>

**ATTENDANCE LIST**

Project Name: Irrigation development & climate change resilience project

Location: Kabungo TIC, Iganga District

Date: 07/08/2018

Sl no	Name	Designation	Contact	Email	Signature
1.	NIWAMANYA BOAZ	ENG. ASST	0732695734 0702695284	boaz.nwamanya@jbn.co.ug	
2.	AMUKINGI BAKESIMU	WASTE OPERATOR	0751550064 0782873045	amukingi@jbn.co.ug	
3.	TAMUNGUUGUZI MOSES	CBO	0754689144	Mosatinco9@gmail.com	
4.	MBAHEKO NYERATE	Asa Team Core for TIC	0782589036 0751529006	mbaheko@gmail.com	
5.	NINSIIMA EVIDENCE	AGRICULTURE OFFICER	072405201 0784117717	ninsidance@gmail.com	
6.	JUSTIN RUKBYIRE	GIS - KIL	0773552142	hdy.kyamba@gmail.com	
7.	BYENGT JUKUN	LCII CLERK	0152182990 072182990	kyabwamba@gmail.com	
8.	Kedress Ategyereiz	Vic. person	0751404889		
9.	GUMIZO ABAYIRA	SAS (CBO OFFICE)	0782845733	gumizinga@yahoo.com	
10.					Am



### ATTENDANCE LIST











Project:.....

Location: Isingiro District #10 Date: 03/03/2018

Sr no.	Name	Designation	Phone Contact/ E-mail	Signature
1.	TUMUSIAME PATRICK	DAO	0702551008   0776553008 patrick.tumusiame@gmail.com	
2.	Kamoga Abdu	EO	0752581409 kamoga.abdu@gmail.com	
3.				
4.	BIENGYE EMMANUEL	A-APPC/SFO	emmanuel.biengye@gmail.com	
5.				
6.				
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**ATTENDANCE LIST**

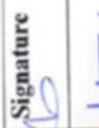








Project Name: Kagame 2 village development and climate Resilience Project  
 Location: Kagame Village Date: 7/03/18

Sl no	Name	Designation	Contact	Email	Signature
1.	Mubongizi eliza	Kyama 2 village	0752858088		
2.	MUYAMBI KIIZA	KAGOTO I	-		
3.	Hachiri diction Benjamin gorky	Agri culture Asst.	0745232587		
4.	Alkwasibuse Robert	Kagoto I	0758717061		
5.	Tumusiime Bous Elab	Kagoto I	0777541228		
6.	Eng Obad	Kagame 2 village	0705526194		
7.	TUMWASOZE	KAGOTO			
8.	WAKWANE	KAGOTO	075512412		
9.	Byambuma Andrew	KAGOTO II	070375184		
10.	TUMWASOZE	PTHMORA			

**ATTENDANCE LIST**

Project Name: Irrigation Development and Climate Resilience APED

Location: Kagoto village ..... Date: 7/08/18 .....

Sl no	Name	Designation	Contact	Email	Signature
1.	BANYENZAKI Aggrey	CI MAN LCI KAGOTO II	0784561152 0759368393		
2.	MRIESI BWA TUSIIME EDWARD	CI MAN L.C.I KAGOTO.I	078244269 0753813825		
3.	TURVAMUREBA.	CI MAN LCI KATOOMA I	0752904987		
4.	UMUKURUBA KILBER	KAGOTO I	0775185448		
5.	TUMUKURATE Maboth	KAGOTO I			
6.	KATUJIME Willy	Katumba I	0706107412		
7.	RUKUNDU	EMURU			
8.	KABACYE nga	SITIKANI			
9.	Banyenzaki Jocah	Katumba I	0703800009		
10.	RWENDURU Y0 Jovanis	KAGOTO I	0703800009		

**ATTENDANCE LIST**

Project Name: *Integration, Development and Climate Resilience Project*

Location: *Kagoto Village* Date: *7/08/18*

Sl no	Name	Designation	Contact	Email	Signature
1.	<i>Obweza Simbaezi</i>	<i>Kagoto I</i>	<i>077541208</i>		<i>[Signature]</i>
2.	<i>Tumutegireza Inged</i>	<i>M'paningaga</i>	<i>0779387906</i>		<i>[Signature]</i>
3.	<i>Tukomuhoba Elvine</i>	<i>Kanywamari III</i>			<i>[Signature]</i>
4.	<i>Bamukanda B</i>	<i>Kagoto II</i>			<i>[Signature]</i>
5.	<i>Makiri John Bwa</i>	<i>Kagoto II</i>			<i>[Signature]</i>
6.	<i>Ahimbisibwe Gooda M'paningaga</i>				<i>[Signature]</i>
7.	<i>Dyibesho</i>	<i>Kagoto</i>			
8.	<i>EMAMY</i>	<i>MUKHENZA</i>			
9.	<i>KAGURUSI STEPHEN</i>	<i>Kagoto II CD</i>	<i>078419757</i>		<i>[Signature]</i>
10.	<i>Habasa Fred</i>	<i>Katooma</i>	<i>0750131089</i>		





*[Signature]*  
*[Signature]*

*Mkwasibwe S. Katooma - 0792135677*  
*Muhungu P. Kagoto II - 0706577305*

**ATTENDANCE LIST**

Project Name: Intigration Development & Climate Resilience Project



Location: Toto District Date: 10/08/18

S/N	Name	Designation	Contact	E-mail	Signature
1.	Dustin Balaba	CD	0782515587	dunkalaba2018@rocketmail.com	
2.	Paul Vincent	BUDD	0772555891	vincentofit2014@gmail.com	
3.	Okware Patrick	ARMO	0772455090	patrickware@yahoo.com	
4.	OKONGO EMMANUEL SAMUEL	Environment OFFICER NWE/NIVEE	0787262974	esokongo@gmail.com	
5.					
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ATTENDANCE LIST

Project Name: ..... MAGORO IRRIGATION DEVELOPMENT AND CLIMATE RESILIENCE PROJECT











Location: ..... Nagola sub county Hq. Date: 9/05/2018

S/N	Name	Designation	Contact	E-mail	Signature
1.	Othene Jackson	Chgo	0788276989	Othenejackson@gmail.com	
2.	ESTIMATE G.W. DIBBO	PERSONALITY	0785-278204	Qjwangelko@gmail.co	
4.					
5.					
6.					
7.					
8.					
9.					
10.					

**ATTENDANCE LIST**

Project Name: ..... Irrigation development and climate change resilience project (Magoro)

Location: ..... Malanab B Village ..... Date: 9/08/2018

S/N	Name	Designation	Contact	E-mail	Signature
1.	OSIDE MOSES	MALAWA-B	077555523		
2.	Othieno christens	" "	0785377091		
3.	Ochieng J. martin	" "	-		
4.	Omyango Stephen	" "	-		
5.	Ahino Helen	" "	-		
6.	MOGA michael	" "	0704173811		
7.	Owari Richard	" "	-		
8.	Owari martin	" "	-		
9.	Owaga Anthony-Sam	Magoro B	0756594732		
10.	OWINO DAVID		0777119416		

**ATTENDANCE LIST**

Project Name: ..... Irrigation development Project (Magoro) .....

Location: ..... Mabwa B Village .....

Date: .....

S/N	Name	Designation	Contact	E-mail	Signature
1.	Topista opela	musawa 'B	077829535		Topista
2.	Topira Pafuc omale	pastor	0773534789	ptuacof@vodafone.ug	Topira Pafuc
3.					
4.					
5.					
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### 7.3 ANNEX 3: ESMF SCREENING FORM

#### Screening Form for Potential Environmental & Social Safeguards Issues

This form is to be used by the Implementing Agency for to screen potential environmental and social safeguards issues of a sub project, determine Bank policies triggered and the instrument to be prepared for the sub project

Subproject Name	Irrigation Development and Climate Change Resilience Project
Subproject Location	The Project has as core focus on the development of two new large-scale irrigation schemes (Kabuyanda and Matanda/Enengo, both in the Western Region) and develop a pipeline for future investments (Amagoro in the Eastern Region, and Nyimur in the Northern Region).
Subproject Proponent	Component 1. Irrigation and Drainage Service Development (US\$170 million) <i>Sub-component 1.1: Infrastructure Development</i> <i>Sub-component 1.2: Integrated Catchment Management</i> Component 2. Support services for agricultural production and value-chain development (US\$20 million) <i>Subcomponent 2.1: Farmer Organizational Capacity Enhancement and Support.</i> <i>Sub-component 2.2: Production and Productivity Improvement</i> <i>Sub-component 2.3: Value Addition and Market linkages.</i> Component 3. Institutional Strengthening and Implementation Support (US\$10 million)
Subproject Type/Sector	
Estimated Investment	
Start/Completion Date	

Questions	Answer		If Yes WB Policy triggered	Documents requirement if Yes
	yes	no		
Are the subproject impacts likely to have significant adverse environmental impacts that are sensitive <sup>15</sup> , diverse or unprecedented? <sup>16</sup> Please provide brief description:	✓		OP Environmental Assessment Category A	4.01 Environmental Assessment (ESIA).

<sup>15</sup> Sensitive (i.e., a potential impact is considered sensitive if it may be irreversible - e.g., lead to loss of a major natural habitat, or raise issues covered by OP 4.04, Natural Habitats; OP 4.36, Forests; OP 4.10, Indigenous Peoples; OP 4.11, Physical Cultural Resources; or OP 4.12, Involuntary Resettlement; or in the case of OP 4.09, when a project includes the manufacture, use, or disposal of environmentally significant quantities of pest control products);

<sup>16</sup> Examples of projects where the impacts are likely to have significant adverse environmental impacts that are sensitive, diverse or unprecedented are large scale infrastructure such as construction of new roads, railways, power plants, major urban development, water treatment, waste water treatment plants and solid waste collection and disposal etc.

Do the impacts affect an area broader than the sites or facilities subject to physical works and are the significant adverse environmental impacts irreversible? Please provide brief description:	√		OP 4.01 Environmental Assessment Category A	ESIA to be undertaken.
Is the proposed project likely to have minimal or no adverse environmental impacts? <sup>17</sup> Please provide brief justification:		X	OP 4.01 Environmental Assessment Category C	No action needed beyond screening
Is the project neither a Category A nor Category C as defined above? <sup>18</sup> Please provide brief justification: Some of the subcomponents activities could be of low key in nature, hence, their impacts could be minimal.			OP 4.01 Environmental Assessment Category B	Limited ESIA or ESMP
Are the project impacts likely to have significant adverse social impacts that are sensitive, diverse or unprecedented <sup>19</sup> ? Please provide brief description:	√		OP 4.01 Environmental Assessment Category A	ESIA
Will the project adversely impact physical cultural resources? <sup>20</sup> Please provide brief justification: Process of excavations could expose some archaeological or PCR materials.	√		OP 4.11 Physical Cultural Resources	Addressed in ESIA (ESIA with PCR Management Plan and/or Chance Find Procedures)

<sup>17</sup> Examples of projects likely to have minimal or no adverse environmental impacts are supply of goods and services, technical assistance, simple repair of damaged structures etc.,

<sup>18</sup> Projects that do not fall either within OP 4.01 as a Category A or Category C can be considered as Category B. Examples of category B sub-projects include small scale *in-situ* reconstruction of infrastructure projects such as road rehabilitation and rural water supply and sanitation, small schools, rural health clinics etc.

<sup>19</sup> Generally, sub projects with significant resettlement-related impacts should be categorized as A. Application of judgment is necessary in assessing the potential significance of resettlement-related impacts, which vary in scope and scale from sub project to sub project. Subprojects that would require physical relocation of residents or businesses, as well as sub projects that would cause any individuals to lose more than 10 percent of their productive land area, often are categorized as A. Scale may also be a factor, even when the significance of impacts is relatively minor. Sub projects affecting whole communities or relatively large numbers of persons (for example, more than 1,000 in total) may warrant categorization as A, especially for projects in which implementation capacity is likely to be weak. Sub projects that would require relocation of Indigenous Peoples, that would restrict their access to traditional lands or resources, or that would seek to impose changes to Indigenous Peoples' traditional institutions, are always likely to be categorized as A.

<sup>20</sup> Examples of physical cultural resources are archaeological or historical sites, including historic urban areas, religious monuments, structures and/or cemeteries particularly sites recognized by the government.

Will the project involve the conversion or degradation of non-critical natural habitats? Please provide brief justification: The areas to be converted are likely to be large for instance, Nyimur earmarks some 4,000ha of land.	√		<i>OP 4.04 Natural Habitats</i>	Addressed in ESIA
Will the project involve the significant conversion or degradation of critical natural habitats <sup>21</sup> ?		X	<i>OP 4.04 Natural Habitats</i>	Not eligible
Does the sub-project construct a new dam or rely on the performance of an existing dam or a dam under construction?	√		<i>OP 4.37 Dam Safety</i>	Dam Safety Plan
Does the project procure pesticides (either directly through the project, or indirectly through on-lending, co-financing, or government counterpart funding), or may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides?	√		<i>OP4.09 Pest Management</i>	Addressed in ESIA (Pest Management Plan)
Does the sub-project involve involuntary land acquisition, loss of assets or access to assets, or loss of income sources or means of livelihood? Please provide brief justification:	√		<i>OP 4.12 Involuntary Resettlement</i>	Resettlement Action Plan
Are there any ethnic minority communities present in the sub project area and are likely to be affected by the proposed sub-project negatively or positively? Please provide brief justification:		X	<i>OP 4.10 Indigenous People</i>	Ethnic Minority Development Plan/Indigenous Peoples Plan
Will the project have the potential to have impacts on the health and quality of forests or the rights and welfare of people and their level of dependence upon or interaction with forests; or aims to bring about changes in the management, protection or utilization of natural forests or plantations? Please provide brief justification: The project activities could lead to loss of some useful local trees ( <i>Vittaleria paradoxum</i> -Shea Butter Trees). Such loss is to be computed in the money for compensation of Shea Butter trees will be used for their conservation drives.	√		<i>OP4.36 Forestry</i>	Addressed in ESIA

<sup>21</sup> Subprojects that significantly convert or degrade critical natural habitats such as legally protected, officially proposed for protection, identified by authoritative sources for their high conservation value, or recognized as protected by traditional local communities, are ineligible for Bank financing.

Will the project have the potential to have significant impacts or significant conversion or degradation of critical natural forests or other natural habitats?		X	OP4.36 Forestry	No eligible
Is there any territorial dispute between two or more countries in the sub project and its ancillary aspects and related activities?		X	OP7.60 Projects in Disputed Areas	Governments concerned agree
Will the sub project and its ancillary aspects and related activities, including detailed design and engineering studies, involve the use of international waterways <sup>22</sup> ?	√		OP7.50 Projects on International Waterways	Notification (or exceptions)

**Conclusion and Safeguards Instruments Required:**

The sub project is classified as a Category A type project as per World Bank OP4.01, and the following safeguards instruments will be prepared:

1. A detailed ESIA
2. Resettlement Action Plan
3. Pest Management Plan
4. Occupational Health and Safety Plan
5. HIV/AIDS Management Plan
6. Dam Safety Plan
7. Emergency Preparedness Plan
8. Waste Management Plan
9. Labor Force Management Plan

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<sup>22</sup> International waterways include any river, canal, lake or similar body of water that forms a boundary between, or any river or surface water that flows through two or more states.

## GENERAL

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.
2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general, these measures shall include but not be limited to:
  - a. Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
  - b. Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
  - c. Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
  - d. Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.
  - e. Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.
  - f. Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
  - g. Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.
  - h. Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
  - i. Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
  - j. Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long-distance transportation.
  - k. Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

#### **WORKSITE/CAMPSITE WASTE MANAGEMENT**

- a. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be banded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed at designated disposal sites in line with applicable government waste management regulations.
- b. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
- c. Used oil from maintenance shall be collected and disposed of appropriately at designated sites or be re-used or sold for re-use locally.
- d. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.
- e. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.
- f. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

#### **MATERIAL EXCAVATION AND DEPOSIT**

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.
13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.
14. New extraction sites:
  - a. Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.

- b. Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.
  - c. Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.
  - d. Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
  - e. Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
  - f. Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.
15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.
  16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
  17. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.
  18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

#### REHABILITATION AND SOIL EROSION PREVENTION

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.
22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
23. Locate stockpiles where they will not be disturbed by future construction activities.
24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
29. Minimize erosion by wind and water both during and after the process of reinstatement.
30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

31. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

#### WATER RESOURCES MANAGEMENT

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.
33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream, and maintains the ecological balance of the river system.
36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.



## 7.5 ANNEX 5: CHANCE FIND PROCEDURES

A Chance Finds Procedure to guide management of any accidental discoveries of histo-cultural resources in the process of implementing the RRF. The procedure will be as follows:

- a. Stop the construction activities in the area of the chance find;
- b. Delineate the discovered site or area;
- c. 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 present until the responsible local authorities and the Directorate of Museums and Monuments take-over;
- d. Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Directorate of Museums and Monuments under the Ministry of Tourism, Wildlife and Antiquities (within 24-48 hrs or less);
- e. The Directorate of Museums and Monuments would 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 Directorate of Museums and Monuments (within 24 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;
- f. Decisions on how to handle the finding shall be taken by the Directorate of Museums and Monuments. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
- g. Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Directorate of Museums and Monuments; and
- h. Construction work could resume only after permission is given from the responsible local authorities and the Directorate of Museums and Monuments concerning safeguard of the heritage;
- i. These procedures must be referred to as standard provisions in construction contracts, when applicable. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed;
- j. Construction work will resume only after authorization is given by the responsible local authorities and the National Museum concerning the safeguard of the heritage; and
- k. Relevant findings will be recorded in World Bank Implementation Supervision Reports (ISRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

## 7.6 ANNEX 6: EXCERPTS FROM MWE CLIENTS SERVICE CHARTER FOR FINANCIAL YEARS 2017/18 TO 2021/22.

MWE Client Service Charter is a social contract between the Ministry, as a service provider and its clients/service users. It specifies standards for the delivery, which MWE believes its clients/service users have a right to expect and sets out feedback and complaint handling mechanisms. The Charter, therefore, defines the Ministry key results areas, the commitments relating to each of the result area as well as the performance standards which our clients should expect. The Charter also lays down the core values to guide our staff in service delivery, key among which are quality client service, credibility, good stewardship, transparency and accountability.

The main purpose of the charter is to create awareness to the public of the availability, timelessness and quality of the services offered by the Ministry. This is done by assisting clients/service users to understand what the Ministry commits to do and how we can be contacted.

Clients/Service Users are helped to understand what their roles are in ensuring high standards of service delivery, and how they can contribute to finding solutions where service delivery is not to expectations. The services offered by the Ministry include, but are not limited to policy formulation, standards setting, monitoring and support supervision and capacity building for the sector stakeholders at all levels. The charter will assist clients/service users in understanding their rights, and also provide a mechanism for feedback on accessibility and the standards of services offered.

### **MINISTRY CLIENTS RIGHTS, EXPECTATIONS AND RESPONSIBILITIES**

Our clients include Sector Ministries, Service Commissions, Local Governments, Development Partners, Non-Governmental Organizations, Community Based Organizations, CSOs, Institutions both public and private, Communities, individuals and the Ministry staff.

#### **Clients Rights and Expectations**

We shall readily avail information for your rights on services to be provided. The Ministry has put in place mechanisms to ensure availability of such information. In addition, you have the right to:

- a. Timely access to quality services at all levels;
- b. Fairness and transparency;
- c. Gender sensitiveness in provision of services;
- d. Equitable distribution of financial and material resources;
- e. Good governance;
- f. Non-discriminatory service provision;
- g. Courtesy and responsiveness in service delivery;
- h. Access to information in accordance with the law;
- i. Review and appeal in accordance with established procedures;
- j. Lodge complaints; and
- k. Privacy and confidentiality.

#### **Clients Responsibilities**

Our clients will have the following responsibilities:

- a. Treat our staff with courtesy, politeness while guarding against abusive, threatening or violent behavior;

- b. Not to offer gifts, favor's or inducements to Ministry staff, or to solicit for the same;
- c. Attend scheduled meetings and appointments punctually;
- d. Respond to requests for information by us thoroughly and timely;
- e. Abide with the legal requirement for access to services;
- f. Contribute to our service provision in accordance with laid down policies and regulations;
- g. Make sure that necessary documents and other information are at hand to simplify work;
- h. Comply with all reasonable requests made by staff in an effort to attend to your request;
- i. Ensure resources disbursed from us are efficiently and effectively used in accordance with the approved work plans and budgets;
- j. Participate in our meetings to which you're invited.

### **FEEDBACK FROM OUR CLIENTS**

We are committed to providing the best service to our clients in a friendly and courteous manner. We are aware that feedback on our performance and suggestions for improvement can help us do better, and these will be taken seriously and dealt with as quickly as possible by an officer of appropriate seniority. To this end, we advise that feedback may be provided to us through the following ways:

#### **Written communication to either:**

The Permanent Secretary,  
Ministry of Water and Environment  
P.O Box 20026, KAMPALA.  
Telephone. +256 414 505942  
Fax.+256 414 505961  
E-mail: [ps@mwe.go.ug](mailto:ps@mwe.go.ug)

#### **OR**

The Ministry Clients Charter Coordinator/Head of Human Resources in the Ministry on telephone number +256 414 221179.

#### **OR**

Hand delivery of feedback to our offices at Plot 22/28, Old Port Bell Road, Luzira, Kampala. Our offices shall be open from 8.00 a.m. to 5.00 p.m., Monday to Friday, except during public holidays.

- a. Use of our suggestion box which is conveniently located at the Ministry entrance/reception;
- b. Interaction with our officers through meetings, seminars and workshops conducted from time to time.

### **MANAGING COMPLAINTS AND APPEALS**

Complaints for our clients shall be treated seriously and the following management procedures are guaranteed:

- a. Raising the complaint with the person rendering the service. Through this, our clients shall receive responses to the issues raised.
- b. Where the client will not be satisfied with the response provided, the client shall raise the issue with the relevant supervisor.
- c. On failure to have a response from the supervisor, an appeal will then be raised to the respective Head of Department who shall be able to resolve the complaint within five days.

- d. In case the client is not satisfied with the response for the Head of Department, he or she shall refer the matter to the Permanent Secretary who shall act on it within seven working days from the date of receipt of a written communication on the matter.

## **CONTACTING US**

### **Talking to our staff**

While talking to clients, our staff will:

- a. Be polite, helpful and will treat clients with respect;
- b. Listen carefully in order to understand and to respond to clients' needs;
- c. Give their names and wear a name tag/badge where appropriate;
- d. Give clients an explanation of their actions and inactions;
- e. Tell clients what will happen next, and or direct them to the next destination.

### **Visiting our offices**

When visiting our offices:

- a. Offices will be clean and neat;
- b. Offices will be easily accessible;
- c. Receptionists will be smart, welcoming and will provide a range of information about our services;
- d. Receptionists will attend to clients promptly and will make sure they direct our clients to those who can appropriately deal with their enquiries or arrange appointment where necessary;
- e. When on an appointment we will provide explanation on any delay of over ten minutes in attending to you;
- f. Persons dealing with your enquiries will give their names and wear a name tag/badge;
- g. If one cannot visit our offices, we will try to make other arrangements to provide audience.

## 7.7 ANNEX 7: SAFEGUARDS CAPACITY WITHIN WATER FOR PRODUCTION DEPARTMENT

Structure within Department	Positions	Name	Contacts and Emails	Terms of Employment
<b>Environment Officers</b>	Position of Environment Officer-Centre	Mugabe Motram	0782717329/ 07002717329 mmotram@yahoo.com/motram.mugabe@mwe.go.ug	Contract
	Environment Officer for Water for Production Regional Centre East (WfPRC-E) Mbale	Okongo Emanuel Samuel	0787262974 esokongo@gamil.com	Contract
	Water for production Regional Centre West(WfPRC-W)	Claude Louis Kaweesa Nsoby	0704299961 claudensoby@gmail.com	Contract
	Environment Officer-Water for Production regional Centre North (WfPRC-N).	Mirembe Kareen	0701337734 kareenpanja@gmail.com	Contract
	Senior Environmental Health Officer – MWE (Support to the department)	Kyomugisha S. Trinh	0782853020 trinhaks@gmail.com	Contract
<b>Sociologists</b>	Sociologist WfP- Centre	Nuwagira Paul	0772422604 nuwapaul@yahoo.co.uk	Permanent
	Senior Sociologist-WfP-Centre	Kaboyo Lydia	0757910972 lydia.kaboyo@mwe.go.ug	Contract
	Sociologist-WfP-Centre	Kibirige Faridah	078352849 faridahkibirige@yahoo.com	Contract
	Sociologist-WfP-Centre	Twinamasiko Gerald	0782432337	
<b>Sociologist (WfPRC-EAST)</b>	Sociologist-(WfPRC-E) Mbale	Juma Nakendo	0772981546 Juma.nakendo@mwe.go.ug	Permanent
	Sociologist-(WfPRC-E) Mbale	Nafuna Allen	0777156155 allainenafuna@gmail.com	Contract
	Sociologist (WfPRC-E)	Bashir Nkata	0779457162 bashirnkata@yahoo.com	Contract

<b>Sociologists (WfPRC-WEST)</b>	Sociologist (WfPRC-W)	Karungi Sheilla	0785996548 Sheial.karungi89@gmail.com	Contract
	Sociologist	Kisakye Jacinta	0782076222 Kisakye.jacinta@yahoo.com	Contract
<b>Sociologists WfPRC-NORTH</b>	Sociogist	Katongole Geofrey	geoffreykatongole@gmail.com	Contract
	Sociologist	Akello Stella	0774349574 Stellaakello19@yahoo.com	Contract
<b>Surveyors</b>	WfP-Centre	Lamek Lallu	0705732035 lameckelalu@yahoo.com	Contract
	Suveyor- WfPRC-East	Katumba David	0779109378 Katumbad50@gmail.com	Contract
	Surveyor- WfPRC-North	Omona Pius	omonaep@gmail.com	Contract

## 7.8 ANNEX 8: PEST MANAGEMENT PLAN FOR IRRIGATION DEVELOPMENT AND CLIMATE RESILIENCE PROJECT

The Irrigation Development and Climate Resilience Project (IDCRP) aims to support the Government of Uganda (GoU) in the shift towards more resilient agriculture through the development of irrigation services. By creating the conditions for irrigated agriculture, the Project will make the farmers in the project areas more resilient to the expected growing water stress by insulating against seasonal variability and drought, increasing their agricultural yields and efficiency, and lengthening the growing season. The Project will support the provision of irrigation and drainage services to farmers who, freed up from the risk of droughts, will be more prone to invest in other production inputs (improved seeds, fertilizers, machineries), also thanks to the establishment of adequate incentives. This will overall result in higher yield, diversification and intensification. This change will be pulled by the market, with irrigation becoming the anchor for the development of value chains and strong producer organizations. The Project recognizes the need to develop irrigation models that responds to local needs, and to focus of institutional development to ensure long term sustainability.

### Risks of pests, Diseases and Weeds

Crop pests, diseases and weeds are identified as the greatest risk to Ugandan agriculture and, unless addressed, the ASSP objectives are at risk<sup>23</sup>. Losses due to pests and diseases are estimated at: 10-20% (preharvest); 20-30% (post-harvest); and up to 100% for perishable crops and export crops. Annual losses in the priority crops suffering the highest monetary loss due to pests are estimated at: US\$ 35-200 million (bananas), US\$60-80 million (cassava), US\$10 million (cotton) and US\$8 million (coffee). Examples of key pests that are seriously constraining any increases in agricultural productivity in priority crops, include: Coffee Wilt Disease (CWD), Banana Xanthomonas Wilt (BXW), Cassava Brown Streak Virus (CBSV), Fruit Flies and Citrus Canker. Spread of pests and potential economic impact depends on various factors including: the value chain affected; geographical location; management practices available at farm level and; whether the pest is categorized as well established or new. Actual economic losses from plant diseases are hard to find in Uganda and in many other African countries. However, the Agricultural Risk Assessment Study by PARM/IFAD (PARM

<sup>23</sup> MAAIF/CABI 2017: *Crop pests and disease management in Uganda: status and investment needs*

2016) concluded that crop pest and diseases have very high frequency and very high average and maximum severity. Crop pest and diseases have the highest risk score in that report and deserve to be a priority.

### **Vulnerability of Uganda to pests and disease attacks**

Danielsen *et al.* (2014) notes: “Like most African countries, Uganda is ill equipped to safeguard crops against existing and emerging pest and disease risks associated with climate change, increasing globalization and human mobility. Diagnostic services, for example, are scarce and poorly coordinated.” Also, that “Public crop protection measures are mainly restricted to border control and sporadic field inspections with hardly any services to deal with farmers’ day-to-day crop health problems. There is a pervasive feeling among Ugandan extension organizations and line ministry officials that farmers have been abandoned in their struggle against an escalating plant pest and disease burden”. Meanwhile, Kroschel *et al.* (2014) noted “major pest and disease outbreaks create shocks at local and larger scales and erode resilience of farming systems, perpetuating and deepening poverty. Such events are characterized by weak phytosanitary capacity in pest and disease risk analysis, diagnostics, surveillance and control and policy interventions. This predisposition is projected to become more acute under scenarios of climate change, increased trade, human movement and due to intensified agriculture to meet demand for food and feed from an increasing population.”

Various stakeholders in Uganda, including researchers, argue that changes in weather patterns including drought, unpredictable and varied rains and temperature changes are causing alterations in the appearance and severity of newer pests e.g. black twig borer (*Xylosandrus compactus* (Eichhoff)). In addition, existing diseases are migrating to ecological zones where previously they did not exist. For example, coffee leaf rust (*Hemileia vastatrix*), traditionally limited to higher elevations, is now appearing at all elevations, whereas stem and bean borers are moving up to higher altitudes. Although credible data on the levels and spread of these diseases and pests is not available, the potential risk cannot be underestimated. The outbreak of Coffee Wilt Disease (CWD) (*Gibberella xyloarioides*) in 1990s, for example, destroyed more than 10 million Robusta coffee trees countrywide, in a period of less than 20 years, making the country lose billions of shillings.

The pests and disease problem in Uganda is exacerbated by limited resources for research and extension in Uganda. The inability to identify and monitor infestations in a timely manner, insufficient research capacity to evaluate and respond to problems, insufficient extension services to promote good agricultural control practices, and limited access to inputs suggest that the sector is presently not sufficiently prepared to address pest and disease risks in an effective manner that would adequately mitigate potential losses.

### **Factors contribution to vulnerability**

Based on review of the literature, interviews with key informants and personal experiences of the consultants, increasing vulnerability to pests and diseases is occasioned by an interplay of factors which can be summarized as follows:

- a. **New pests spread:** this takes place primarily due to a set of under-lying causes related to a) spread through marketing and material movement; and b) outbreaks going unnoticed due to limited information and surveillance measures;
- b. **Marketing and material movement:** affects movement of plants and plant materials both internally and across borders either through grain, seed/planting material or fresh produce such as fruits taken to the market. Traders move diseased plant materials either knowingly (to avoid income loss) or unknowingly. Movement of viable plant material, whether for sale or just exchange, has been responsible for pest spread);

- c. **Outbreaks that go unnoticed:** Mechanisms to anticipate and respond to pest problems before they become serious are needed but are currently insufficient as a result of: inadequate personnel and budget to undertake pest and disease monitoring and response; inadequate and non-coherent monitoring and reporting of pest situations; and inadequate diagnostics services all make pests/diseased materials to go unnoticed across borders;
- d. **Poor farm level management:**  
The principle causes of poor pest management at farm level were identified as; a) limited awareness of pest management solutions, b) sometimes farmers don't follow advice, c) lack of practical solutions, d) counterfeit chemicals e) poor quality seed, and f) poor soil fertility and nutrient management;
- e. **Limited awareness of pest management solutions:** farmers have limited capacity to identify, differentiate and diagnose disease problems and effectively respond to them and in situations where they can identify the problems, they fall short on management practices both pre- and post-harvest which is partly blamed on inadequate supporting extension system;
- f. **Lack of practical and workable solutions:** interactions with scientists and researchers revealed a general lack of practical solutions for management of key pests and diseases. Successful linkages have been recorded in the management of Cassava Green Mite and Cassava Mealy Bug employing classical biological control using natural enemies already developed by the International Institute for Tropical Agriculture (IITA) in West Africa;
- g. **Prevalence of counterfeit agro-chemicals:** It has been reported that the probability of buying fake seed or fake pesticides in Uganda is high and that, counterfeits and fake agro chemicals account for 10% to 15% of the national agrochemicals in the market valued at US\$ 6 million per year (ASARECA, 2010). Counterfeit pesticides coupled with poor application methods by farmers have reportedly led to pesticide resistance in some instances. This means that certain pests cannot easily be managed by existing pesticides in the market;
- h. **Poor farm level soil fertility and nutrient management:** Research shows that, the ability of a crop plant to resist or tolerate insect pests and diseases is tied to optimal physical, chemical and mainly biological properties of soils (Altieri and Nicholls, 2003). On the other hand, farming practices which very much ties with limited extension to adequately address farmer production constraints;
- i. **Farmers don't follow advice:**  
There are many reasons why farmers do not follow advice. Professor Anthony Mugisha, from Makerere University Veterinary and Animal Research Department blames farmers for breeding drug resistant organisms by ignoring instructions from the manufacturers and their failure to read instructions from the manufactures;
- j. **Poor quality of planting seed:** ideally, seed inspection and certification has not adequately been done by MAAIF due in part to inadequate inspection staff to cover the entire country, inadequate logistics for inspection and seed testing, and limited enforcement of by-laws related to seed counterfeiting. This gap in inspection and certification contributes to the proliferation of fake seed and unscrupulous seed dealers on the market.

### Other factors

Other factors contributing the pest problem include; climate change which is now attributed to the prevalence of pests than it was in the past. However, other factors include to the open borders without full control to manage movement of materials through it. Also lack of collective action by the part of the farmers gives pests and diseases a leeway to cross from one field to the other thereby escaping control actions.



### **Justification for Preparation of an Integrated Pest Management Plan for ICDRP**

It is noted that, project planned interventions under Component 2 focusing on creating and strengthening farmer groups in marketing, finance, and organizational management; facilitate access to quality inputs and appropriate technologies and practices with the aim of improving production and productivity; and support value chain development and market (domestic and regional) linkages to increase the value of traded items for better economic gains. In particular, its *Sub-component 2.2: Production and Productivity Improvement amongst others, envisages to facilitate access to inputs, promote good agricultural practices, sustainable land management practices, and integrated pests and disease management; and, (ii) matching grants to facilitate access to inputs (seeds, fertilizers, agro-chemicals)*. These interventions, trigger World Bank OP 4.09 Pesticides Management in terms of transportation, storage, application and management of obsolete agro-chemicals as such, the need for a Pest Management Plan is needed in this project.

In addition, one of the most logical steps to increase food production is the reduction of current yield losses caused by pests, pathogens, and weeds in the field and during storage. The proposed activities to be funded under the ICDRP are largely aimed at transforming agriculture and increasing production which is likely to come along with increased prevalence of pests and diseases hence, inevitable application of agricultural pesticides. Therefore, to ensure crop pests and diseases are managed in an integrated manner and in compliance with both the national legislations on sustainable development and World Banks safeguard policies, it is imperative to have in place an effective and a Pest Management Plan. The goal of this Pest Management Plan is to reduce the impact of pests to crops, create a list of options based on location and types of crops, and to create a plan that will provide agricultural practices which can reduce problems associated with pesticide usage.

### **Some of the challenges with use of agro-chemicals in Uganda**

Generally, pest management in Uganda is characterized by large use of agrochemicals with also use other methods largely the cultural approaches. The cultural methods employed usually include the use of manual traps and some predators to check some kind of pest's species. However, application and use of agrochemicals has of late increasing challenges which include:

***Continued use of Persistent Organic Pollutants (POPs):*** Uganda is a signatory to the Stockholm Convention on Persistent Organic Pollutants and ratified in 2004. Under Annex A (listed for Elimination) of the convention, Parties must take measures to eliminate the production and use of the chemicals listed under Annex A. These obsolete pesticides are characterized by a high persistence in the environment (e.g. half-life for DDT in soil ranges from 22 to 30 years, Toxaphene -14 years, Mirex -12 years, Dieldrin- 7 years, Chlordecone up to 30 years), low water solubility and thus potential to accumulate in fatty tissue of living organisms including humans and toxicity to both human and wildlife. Considering that Uganda is a Signatory, the country is obligated to stop the use of POPs pesticides if still in use. For other pesticides, which are not POPs, the issue of toxicity still remains and the consequence of application on agricultural farm land, and resultant wider environmental and social impacts.

***Prevalence of adulterated and expired pesticides:*** Challenges associated with direct procurement of pesticides by smallholder farmers in Liberia include the proliferation of illegal imports by unscrupulous private companies and the presence of unlicensed dealers. While it is illegal to sell unregistered pesticides, some pesticides are being sold without registration. Similarly, there are cases of pesticides being re-packaged, and sold in smaller amounts without any, or at least proper, labels. It is important to note that,

the labels on the agro-chemicals containers have information on a number of aspects on the pesticides which is useful to its end users.

**Health risks of agro-pesticides on the farmers:** Concerning health effects resulting from pesticide application, studies indicate no significant disparity occurs between sexes of the farmers who apply agro-chemicals. Some of the reported common health effects include skin irritation, itching, and watery eyes are some of the common health effects experienced by the farmers when they apply agro-chemicals. It is acknowledged that, these impacts are felt because the agro-chemicals are applied without following standard procedures and no use of PPEs in the process. Pesticides have also been linked to a wide range of human health hazards, ranging from short-term impacts such as headaches and nausea to chronic impacts like cancer, reproductive abnormalities, and endocrine disruption. Chronic health effects may occur years after even minimal exposure to pesticides in the environment, or result from the pesticide residues, which we ingest through our food and water. Pesticides can cause many types of cancer in humans.

- a. **Risks to non-target species:** The environmental impact of pesticides consists of the effects of pesticides on non-target species. Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, because they are sprayed or spread across entire agricultural fields. Runoff can carry pesticides into aquatic environments while wind can carry them to other fields, grazing areas, human settlements and undeveloped areas, potentially affecting other species. Other problems emerge from poor production, transport and storage practices. Over time, repeated application increases pest resistance, while its effects on other species can facilitate the pest's resurgence.
- b. **Social and health impacts:** Pesticides can enter the body through inhalation of [aerosols](#), dust and [vapor](#) that contain pesticides; through oral exposure by consuming food and water; and through skin exposure by direct contact. The effects of pesticides on human health depend on the toxicity of the chemical and the length and magnitude of exposure. Farmer, farm workers and their families experience the greatest exposure to agricultural pesticides through direct contact. Children are more susceptible and sensitive to pesticides, because they are still developing and have a weaker [immune system](#) than adults. Children may be more exposed due to their closer proximity to the ground and tendency to put unfamiliar objects in their mouth. Hand to mouth contact depends on the child's age. Children under the age of six months are more apt to experience exposure from breast milk and inhalation of small particles. Pesticides can bio-accumulate in the body over time.

## **CURRENT APPROACHES TO PEST AND DISEASES MANAGEMENT ON RICE AND HORTICULTURAL CROPS IN THE COUNTRY**

Under irrigation in ICDRP, some of the potential crops include rice and horticultural crops and common pests and diseases on these crops can be summarized as follows:

### **Rice**

Rice is fast turning to be one of the main staple foods in Uganda. Upland rice cultivation is more prevalent, with 63% of producing households using this method of cultivation, as compared to 17% of households using and swamp rice cultivation methods (the rest, 21% of producers, combine both techniques). Despite these, its productivity (yields per hectare) are often low due to a host of factors mainly:

- a. **Pest and diseases of rice:** The major insect pests of rice in Africa include stem borers, African rice gall midge and termites. Pests cause considerable crop losses in the field and in storage. It is estimated that each year insects destroy between 10% and 30% of all food produced in Africa. The estimates of rice yield loss due to insects in Africa range between 10% and 15% (FAO, 2017). The major insects and associated damage differ regionally, by country and by rice variety, and in some years may exceed 90% (FAO, 2017).

- b. **Rice Gall Midge:** The Rice Gall Midge is a flying insect pest, the larvae of which feed on the growing tips of new rice shoots. The adult midge is mosquito-like and small, up to 5 mm long. In the few days it is alive, the female can lay 200-400 eggs at or near the base of shoots. African rice gall midge is mainly a pest of rainfed and irrigated lowland rice. The insect prefers high humidity and in wetter years the risk of infestation is higher.
- c. **Bacterial Leaf Blight:** Bacterial leaf blight of rice kills seedlings and destroys the leaves of older plants. The disease is extremely serious worldwide and has emerged as a major problem in irrigated crops in the Sahel. Recently, it has also been reported from East Africa. Wild hosts maintain the disease between crops and spread occurs in irrigation, floodwaters, in wind and rain, and in seed. Management requires planting resistant or tolerant varieties, good drainage of fields, removal of weeds, ploughing under of stubble and removal of volunteer seedlings.
- d. **Rice blast:** Is caused by the fungus *Magnaporthe grisea*, attacks leaves, stems and flowers, killing plants up to tillering, or reducing grain yield and quality on plants that reach maturity. In Africa it is a problem of upland rice in particular. Diamond-shaped spots with white centers and dark borders occur on the leaves and rots develop on stems and flower heads. Rice yellow mottle disease causes major epidemics and yield loss in lowland irrigated rice throughout sub-Saharan Africa. Leaves turn yellow or orange with green streaks, plants are stunted, tiller number is reduced, and panicles produce unfilled or sterile grain. There are many ways it is spread: beetles and grasshoppers and perhaps also other insects and mites; leaf-to-leaf and root-to-root contact; and on harvest implements.



**Figure 34: Rice growing showing symptoms of yellow mottle disease.**

### **Some of the Cultural Methods Used to Control Pests on Rice**

#### **Current approaches to Pest Problems and their Control Practices**

Common pests in the project areas include: rodents and migratory and outbreak pests such as birds, locusts and armyworms. IPM strategies are recommended and used by some farmers as much as it is possible because there is no one control practice/measure that can provide acceptable control of the target pests.

**Rodents:** Rodents, particularly the field rats (*rattus rattus*), the small house mice (*rattus norvegicus*) and multi-mammate shamba rat, (*Mastomys natalensis*) are key pests of food crops. The most affected crops are maize, millets, paddy and cassava. The damage caused by rodents starts at early booting and continues through the mature grain stage as well as the storage stage. Rice is the most susceptible of all the crops. At the pre-harvest stage, rice is attacked at planting (the rodents retrieve sown seeds from the soil causing spatial germination). The rodents cut and eat the fresh stems and parts of the panicle.

**Control of rodents:** Farmers are strongly advised to do the following to reduce potential damage to crops and the environment:

- a. Weeding for clean bunds and fields;
- b. Regular surveillance such that, the earlier incidence of rodents is detected making it cheaper and simpler to effect control measures to keep losses low and negligible;
- c. Sanitation: it is much easier to notice the presence of rodents if the store is clean and tidy;
- d. Trapping: by placing the traps in strategic positions to catch the rats;
- e. Encourage farmers to synchronize field husbandry where fields are grouped together; and
- f. Predation. Keep cats in stores and in the homesteads.

#### **Migratory and outbreak pests of birds, locusts and army worms**

- a. **Army worms:** The key migratory and outbreak pests of economic significance in Uganda are armyworm (*Spodoptera exempta*), birds, and the red locusts whose control and management is coordinated by the Ministry of Agriculture, Animal Industry and Fisheries of Uganda. The African armyworm is of late, one of the major threats to cereal production in a number of African countries. It is a major pest of cereal crops (maize, rice, sorghum and millets) as well as pasture (grass family) and therefore a threat to food security and livestock. The problem with armyworms is that they are highly migratory so that larval outbreaks can appear suddenly at alarming densities, catching farmers unawares and unprepared. The worms destroy crops in the grass family like maize, rice and millet and in addition, animals that feed on infested pasture get bloated and can even die. Currently these are mainly controlled through use agro-chemicals by the farmers.
- b. **Migratory birds:** The red-billed quelea is a small brown weaver bird that can occur in huge flocks (Figure 35). The world's most abundant wild bird, quelea are found only in Africa, especially in semi-arid zones. They are seed-eaters, both of wild grasses and cereals such as sorghum, rice and wheat, but also eat insects, including pests of crops. Estimated annual damage to crops of up to US\$80 million has been recorded across Africa, and it is said to be the most important crop pest in Africa.



**Figure 35: Juvenile, female and male red-billed quelea birds.**

#### **Cultural Control Practices on pests and diseases rice**

Cultural control means use of usual crop and livestock production practices to suppress pest population and damage in the field. These practices include ploughing to expose and kill soil pests, using pest and disease-free seed, planting in time, intercropping, timely weeding, mulching, field sanitation, harvesting in time to minimize exposure of the crop to pests, practicing crop rotation, selection of breeding livestock with the desired traits, general hygiene for livestock and practicing all in all out-livestock production systems.

Other cultural practices include:

- a. Crop rotation - crop rotation helps to prevent pest populations building over a number of years,
- b. Inter-cropping practices,
- c. Field sanitation and seed bed sanitation,
- d. Use of pest-resistant crop varieties,
- e. Managing sowing, planting or harvesting dates;
- f. Water/irrigation management,
- g. Scarecrow materials,
- h. Hand-picking of pests or hand-weeding;
- i. Use of traps or trap crops.



**Figure 36: Local measures used to scare birds in rice fields.**

### **Horticultural Crops**

Vegetables are very important compliments in the diets of most people in Uganda. Vegetables do not only supply cheap and readily available sources of essential minerals and vitamins, but some are also considered as having important medicinal values for human health. In addition to their nutritional and medicinal values, vegetables are also becoming an important source of income especially to peri-urban farmers. In spite of their significance, more than 80% of the farmers have not attended training or workshop on vegetable cultivation. Generally, throughout the country and with reference to agriculture and horticulture in particular, it is noted that, biotic factors are the major constraints hindering their production. Of all the biotic stresses, insects and fungi are the most serious on all vegetables causing losses that can reach 100% during severe infestation (Dr. Ambrose Agona, DG NARO Nov. 2018 *per.comm.*) as seen on Figures 36 and 37.



Figure 37: Damage on cabbages by Leaf-miners pests



Figure 38: Tomato damaged by Aphids

Table 12: Summary of Pests and Diseases in Horticultural Crops

Some of the common Pests and Diseases of Cabbage	
Major pests and Diseases	Comments
Diamond-back moth (DBM) ( <i>Plutella xylostella</i> )	It is the most serious pest of cabbage. DBM female moth lays its eggs singly. Eggs are glued to the underside of leaves and hatch after 3-5 days into green larvae. Larvae creep to underside of leaf, pierce the epidermis and tunnel or bore through the leaf tissue. Progressively eat leaf from underneath leaving the upper cuticle intact creating a bizarre window, which later disintegrates.
Cabbage aphids ( <i>Brevicoryne brassicae</i> )	Usually occur in large numbers, mainly during dry spells. Sucking pests, grey or green with soft pear-shaped bodies often in colonies on lower side of leaves. Suck sap causing stunting growth and honeydew excretes on leaves.
Bacteria soft rot ( <i>Erwinia carotovora</i> )	Is a major disease of cabbages attacking its leaves and affected areas take on a water-soaked appearance and start to decay and emitting an unpleasant smell. Cabbage heads decay rapidly and turn dark.
Pests and Diseases of Cucumbers	
Major pests and Diseases	Comments
Aphids ( <i>Aphis gossypii</i> )	Are common on cucurbits. Occur in colonies of green to blackish aphids under leaves, where they suck the sap. Move from plant to plant in their winged form and transmit virus diseases.
White flies ( <i>Bemisia tabaci</i> )	White fly adults are small, winged insects that fly off readily when disturbed. Attack cucurbits, sucking sap and secreting sticky honey dew on which black mould develops. Adult transmits various virus diseases which damage cucurbits.
Powdery mildew ( <i>Erysiphe cichoracearum</i> )	Is a very serious fungus disease that affects leaves of cucurbits, causing them to dry up and die. Can be recognized by white powdery spots on upper and lower leaf surfaces and spread from older to younger leaves.
Pests and Diseases of Lettuce	
Major pests and Diseases	Comments

Cutworms ( <i>Agrotis spp.</i> )	Large, brownish-black caterpillars of cut-worms damage young lettuces by cutting through stems at ground level at night, causing plant to collapse and die. Hide in soil during daytime and emerge at night to feed on lettuce.
Damping-off disease ( <i>Pythium spp.</i> )	Fungus disease that is present in soil. It infects stems and roots of lettuce seedlings in the nursery or when just planted in the field.
<b>Pests and Diseases of Onions</b>	
<b>Major pests and Diseases</b>	<b>Comments</b>
Onion flies ( <i>Delia antique</i> )	A major pest of onions. Small, white, headless larvae (maggots) feed just above base of seedlings. Attacked plants die. Larvae are also found in developing
Onion thrips ( <i>Thrips tabaci</i> )	Are major pests of onions throughout Africa. In attacked onion plants, leaves show white and silvery patches, become distorted and may later wilt and die. Adult thrips are tiny, long, brownish-black insects that are very mobile and collect in large numbers at base of onion leaves, sucking the cells of leaves.
Downy Mildew Disease ( <i>Peronospora destructor</i> )	Caused by a fungus that attacks onion leaves. Fungus bodies develop as purple areas on fully mature leaves. Affected leaves drop off and die.
<b>Pests and Diseases of Tomatoes</b>	
<b>Major pests and Diseases</b>	<b>Comments</b>
Fruit fly ( <i>Rhagoletis ochraspis</i> )	It is an important pest of tomato at the fruiting stage. It pierces fruits and leaves rotten spots. Adult fly pierces fruit to lay eggs inside. The small white maggots or larvae develop in the fruit and pupation occurs in the soil below
Tomato Mirid Bugs ( <i>Cyrtopeltis teriuis</i> )	Adults and nymphs of slender, dark green mired bugs feed on tender terminal stems and flower stalks of tomato plants. Inject a toxic substance/saliva into the tissues, causing small, brown necrotic spots to develop. Adult female mirids pierce tomato stems to lay eggs resulting in major damage to stems.
Tomato yellow leaf curl virus (TYLCV)	It is the most serious disease of tomatoes. Transmitted by white flies feeding on tomato leaves. Plants infected by disease are stunted and turn yellow, and leaves curl. Affected flowers and fruits drop off.
<b>Pests and Diseases of pepper</b>	
<b>Major pests and Diseases</b>	<b>Comments</b>
Root-knot nematodes ( <i>Meloidogyne spp</i> )	Are same nematodes that attack eggplant and okra. Affected roots develops gall become malformed inhibiting plant growth; leaves become yellow, then curl and drop-off before they mature.
Pepper Wilt Disease ( <i>Fusarium oxysporum</i> )	Soil-borne disease caused by two species of fungi that infect roots, stems and leaves of pepper. Seedlings wilt and die and old leaves turn Yellow.

### Control pests and diseases in Horticultural Crops

These can be by use of:

#### Use of Neem tree leaves

The stored rice sometimes gets attacked by weevils which inflict losses to the crop harvests. Farmers reportedly collect and dry the leaves of Neem trees under shade, pound them and put them in seeds' bags of rice or other crops grains and this is believed to keep a way the pests from destroying the harvested crop till appropriate time for its sale. The neem extract is also reportedly sprinkled on leaves of cabbages and horticultural crops and is effective to keep off pests and diseases.





**Figure 39: Neem Tree shoots**

**Use of agro-chemicals:** Protection of vegetables from biotic constraints (largely disease) is done mainly by application of a g r o - pesticides such as insecticides and fungicides. Although most farmers prefer this practice, the practice is usually accompanied a host of problems largely:

- a. use of banned and/or extremely toxic pesticides;
- b. sales of fake agro-chemicals;
- c. non-use of personal protection equipment (PPEs),
- d. overuse of same active ingredients for so many years and therefore possibility of development of resistance which translates to no effect on the target organisms with the results that, farmers continue to register loses on the crops; and
- e. acute toxicity on the farmers which is manifested in terms of stomach disorders, vomiting, skin irritations, dizziness, and watery eyes.

#### **OVERALL STANDARDS FOR PESTICIDES TO BE PROCURED AND USED UNDER ICDRP**

The World Bank has been a longtime partner in the agricultural sector. Given its safeguard policies, it has to ensure that the procurement/use of pesticides is done as cautiously as practicable, with proper safeguards in place, and through the use of the least toxic means of effective pest control. In that regard, the following criteria will apply to the selection and use of pesticides in activities under ICDRP:

- a. Pesticide financed under ICDRP must be manufactured, packaged, labeled, handled, stored, disposed of, and applied according to standards that, at a minimum, comply with the FAO's Pesticide storage and stock control manual (FAO, 1996), Revised guidelines on good labeling practice for pesticides (FAO, 1995), Guidelines for the management of small quantities of unwanted and obsolete pesticides (FAO, 1999), Guidelines on Management Options for Empty Pesticide Containers (FAO, 2008), and Guidelines on personal protection when using pesticides in hot climates (FAO, 1990).
- b. Consistent with World Bank OP 4.09, ICDRP financing will not be used for formulated products that fall in WHO classes IA and IB, or formulations of products in Class II, if (a) the country lacks restrictions on

- their distribution and use; or (b) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly.
- c. ICDRP financing will not be used for any pesticide products which contain active ingredients that are listed on Annex III of the Rotterdam Convention (on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade), unless the Country has taken explicit legal or administrative measures to consent to import and use of that active ingredient.
  - d. ICDRP financing will not be used on any pesticide products which contain active ingredients that are as per the Stockholm Convention on Persistent Organic Pollutants, unless for an acceptable purpose as defined by the Convention, or if an exemption has been obtained by the Country under this Convention.
  - e. ICDRP financing will not be used for any pesticide products which contain active ingredients that are listed on Annex III of the Rotterdam Convention (on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade), unless the Country has taken explicit legal or administrative measures to consent to import and use of that active ingredient.

### **Possible use of pesticides**

An approved list by the Agricultural Chemicals Board exists will be used according to their labeled uses when all of the following criteria are met:

- a. The activity is part of an IPM strategy that seeks to minimize pesticide use or use pesticides as a last resort;
- b. Best technology-based practices are followed, leaks or spills are reduced, and application equipment is maintained in good working order;
- c. Timing of pesticide application corresponds to the life cycle of the pests to be treated, and the life cycle is monitored appropriately;
- d. Pest population action thresholds are determined, and monitoring ensures treatment only when the threshold is exceeded;
- e. Weather conditions are appropriate for the application;
- f. Applicators adhere to all of the label requirements concerning the safe and effective use of the pesticide(s);
- g. Persons applying the pesticide are fully trained or are under instructions from MAAIF, UCDA or NAADS or any other competent Extension Staff; and
- h. Activity minimizes pesticide application within 50 meters buffer of streams or other water bodies.

### **Pesticide Application Decisions and Procedures**

Pesticides should be applied by directed, low volume, single wand sprayers, wiping, daubing and painting equipment, or injection systems. Boom application shall be limited to large scale (>5 acres) natural resources enhancement or farming activities. It is important to manage pesticide drift when surface waters or beneficial plants are nearby. Control nozzle size, pressure and droplet size to minimize drift.

Application checklist shall include the following procedures:

- a. Read pesticide label.
- b. Check and calibrate application equipment for safety and efficiency.
- c. Check the weather conditions. Unless otherwise indicated on the product label, avoid pesticide use if it is raining or expected to rain within 24 hours, or wind speed is very high
- d. Post notification signs at all entrances to sites associated with pesticide applications.
- e. List re-entry specifications on the signs if required by the label.

- f. Apply material according to the label.
- g. Record pesticide application on application forms.
- h. Remove signs when the liquid pesticide has dried, unless indicated otherwise on the label.

### Rules and Procedures for Application of Pesticides

- a. **Safety and protection:** There are certain measures which should always be undertaken by pesticide operators to help protect against contamination during the handling and application of pesticides. These measures should always be followed.
- b. **Reading and Understanding Labels:** The first principle is to always read and follow the label recommendations on the pesticide container. If the label information cannot be read or understood for any reason, then the operator should find someone who can explain the instructions to him. Apart from the written instructions, the operator should also look for pictorial information on the label which will indicate the degree of hazard presented by the pesticide formulation. Similarly warning symbols, such as skull and crossbones, give information on the type of chemical hazard.
- c. **Avoiding Contamination:** When pouring and mixing the concentrated product, every effort should be made to avoid splashing or spilling onto skin or clothing. If any product falls on the skin, or into the eyes, then this should be washed off as soon as possible. Heavily contaminated clothing must be removed and washed with detergent and water. The likelihood of contamination can be greatly reduced by using suitable equipment for measuring out and transferring the product. In particular the hands must never be used as scoops nor should the hands or arms be used to stir liquids.
- d. **Personal Hygiene:** Another basic principle of personal protection is good hygiene when working with pesticides to ensure that if any contamination occurs then it is removed in good time. Operators should not eat, drink or smoke during work and should not touch their face or other bare skin with soiled hands or gloves. They should always wash their hands and face after handling pesticides and before eating, drinking, smoking or going to the toilet. When they have finished work for the day, they should then wash themselves thoroughly. Their work clothes should also be washed after work, separately from other clothing, and then dried.
- e. **Safety Gear:** For the effective safety and protection of the workers handling agro-chemicals (Figures 21-22), the provision of the following is deemed necessary.
  - i. Helmet or cloth cap
  - ii. Safety spectacles, goggles or face shield (attached to helmet)
  - iii. Dust or light fume masks
  - iv. Emergency vapor masks or half-face respirators with organic vapor cartridges
  - v. Nitrile rubber or neoprene gloves or gauntlets
  - vi. Overalls
  - vii. Nitrile rubber or neoprene aprons
  - viii. Strong rubber or neoprene boots

Selection, care, and maintenance of work clothing and protective equipment will be paramount given the hot conditions in some parts of Uganda. This is because the wearing of additional protective clothing and other equipment can cause severe discomfort and even physical distress due to heat stress if they are made of inappropriate materials. In addition, because of the discomfort, operators may dispense with protective apparel and become subject to greater exposure and possible contamination. There are certain measures which can help reduce this problem, namely:

- a. Where possible using a pesticide formulation which does not require the wearing of additional items of protective clothing;
- b. Applying the pesticide in the cooler hours of the day when it is more comfortable to wear protective equipment.

### Instructions on Wearing of PPE during pesticides application

Wear protective equipment as described in Table 14 below.

**Table 13: Appropriate PPEs for handling Agro-pesticides**

Equipment	Protection	How to wear it
Coveralls	There are two types of coveralls: disposable and reusable. Disposable coveralls are lightweight and comfortable on warm days. They can be worn for mixing and applying pesticides, and then discarded at the day's end. If they become contaminated, they should be discarded at once. The second type of coverall is made of washable fabric and may be reused many times. These fabric coveralls are adequate for use with all but the most highly toxic and concentrated pesticides.	Button (or zip) right up to the neck. Loose coveralls around the neck will suck and blow pesticide in and out of the interior of the coveralls as you bend and move. Wear coveralls over a long-sleeved shirt and pants.
Aprons	When pouring or otherwise handling concentrated pesticides, it makes good sense to wear protection in the form of an apron. The apron protects the front of your body from spills or splashes of the concentrate. The apron should be made of rubber or synthetic liquid-proof material that will resist the solvents used in formulating the pesticide.	Make sure the apron covers your body from your chest to your boots.
Gloves	Protect your hands by wearing chemical-resistant gloves. Neoprene gloves provide the best protection. Natural rubber gloves may be used when handling organophosphorus or carbamate pesticides. Be sure that they are designed for use with solvents and pesticides. Never use lined gloves, gloves with wristbands or leather gloves.	Put gloves on and roll up the first inch or two of the cuff. That way when you lift your hands, any liquid on the gloves won't drip down your arms.
Hats	Use a chemical-resistant hat, preferably made of washable plastic. The hat may be a hard hat or made of flexible plastic. In either case, it should have a plastic sweatband. Wash and dry entire hat after each use and before storing. Ordinary baseball caps with cloth sweatbands are dangerous as they absorb the pesticide and re-contaminate the forehead each time you wear them. Even small amounts of moderately or slightly toxic pesticides may cause severe skin irritation or other illness if exposure continues for several days.	
Boots	Wear chemical-resistant, unlined boots. These boots are available in a variety of styles and materials. Neoprene boots are the best. Knee-length boots offer greater	Wear your trouser legs outside the top of your boots. This will prevent

	protection because they extend above the lower end of the apron. Avoid leather or fabric boots and shoes because these will absorb pesticides and cannot be cleaned effectively.	spills and splashes from running into the boot and onto your leg.
Goggles	Chemical-resistant goggles keep your eyes safe from both splashing and, if using dry formulations, dusts or granules. Don't use goggles with cloth or elastic headbands as these will absorb pesticides.	Wear goggles snugly on your face so that the sides of your head are protected from splashes. If you wear glasses, make sure you purchase goggles that fit snugly over them. Never wear contact lenses when working around pesticides.
Respirators	Only approved respirators should be used. Do not exchange parts of different respirators. (For example, do not use a cartridge produced by Company "A" with a respirator produced by Company "B" as the combination may not provide adequate protection to the user). Dust masks are ineffective in protecting against herbicide vapors. Similarly, the filters on tractor cabs are intended to remove dust and are not designed to protect against herbicide vapors or mists. Chemical cartridge respirators are recommended for outdoor use when mixing and applying herbicides.	When carrying out operations, change filters each day. The cartridge should be replaced when chemical odor becomes apparent or when breathing becomes difficult. New cartridges should always be installed at the beginning of the spray season. Prior to commencing work, check the face seal while the respirator is on the wearer's face. Regardless of design, respirators cannot be worn securely by people wearing beards, moustaches or sideburns.
Face Shields	Goggles offer some protection, but frequently full-face protection is advised or required according to the pesticide label. It is especially important to protect your eyes and face when pouring or mixing liquid concentrates. Effective face shields are made of clear plastic.	Since the shield attaches to the hard hat, you can raise or lower it as needed.

Note: The key danger times are during mixing and when walking through the spray path. Eye and feet protection are the greatest priority. Goggles, long pants, and rubber boots are most needed. Due to the use of knapsack sprayers by small-scale farmers and being unaccustomed to wearing protective equipment, only pesticides which meet World Bank standards of minimum mammalian toxicity ("least toxic"), yet still effective, will be recommended for use under the project.

**Post-application Visual Assessment:** All operators must conduct visual assessments of application sites. Visual assessments will consist of spot checks in the area in and around where pesticides are applied for possible and observable adverse impacts caused by an application of pesticides. Possible and observable adverse impacts include, but are not limited to, the unanticipated death or distress of non-target organisms, disruption of fish and wildlife habitat.

**Records Keeping:** All records will have to be documented as soon as possible but no later than 14 days following completion of each pesticide application in a treatment area. On or before the 14th day after any pesticide application, a copy of the below information will need to be on file with the Extension Workers. Information for each treatment area to which pesticides are discharged as follows:

- a. Surveillance methods used, dates of surveillance, and findings of surveillance
- b. Target pest(s) and explanation of the need for pest control

- c. Pest or site-specific action thresholds prior to pesticide application
- d. Description of pest management measures implemented prior to the first application
- e. Company name and contact information for pesticide applicator
- f. Pesticide application dates and time of day of application
- g. Description of treatment area, including location and size of treatment area and identification of any waters
- h. Name of each pesticide product used to include ACB registration number
- i. Quantity of pesticide applied
- j. Concentration (%) of active ingredient
- k. Effective concentration of active ingredient
- l. Any unusual or unexpected effects identified to non-target organisms
- m. Was a visual assessment conducted? Was it done during or post pesticide application, if not explanation why not?
- n. Assessment of environmental conditions relating to proper pesticide use

## DISPOSAL OF EXPIRED PESTICIDES AND EMPTY CONTAINERS

### Key Challenges

#### a. Re-use and poor storage of pesticide containers

There is widespread re-use of containers for storing food or water for humans or livestock. Indeed, this may well be the most hazardous practice associated with pesticide use in Uganda. Many farmers wash the containers before re-use, but often less thoroughly than is needed.

#### b. Limited Capacity to dispose Expired pesticides

The only thermal processes that are able to destroy plastics and pesticides are high temperature incinerators and cement kilns with effective emission controls (WHO, 2008). However, Uganda has only one incinerator fit for safe pesticide disposal whose cost of UGX 1500 per kg of pesticide is highly prohibitive for large quantities.

### Possible Interventions and Options for disposal of expired pesticides

- a. **Utilization of Luwero Industries:** One incinerator thought to meet the required pesticide incineration standards is Luwero Industries located at the Nakasongola Military Base (Luwero Industries) but its specifications were not ascertained due to issues of access to a military facility. Although MAAIF had been allowed to utilize the facility for pesticide disposal, the UGX 1500/= per Kg incinerated was too expensive for MAAIF to afford. There have also been concerns over access to the facilities by NEMA to monitor its operations. ***NEMA licensed Waste Disposal service providers that have access to the incineration facilities at Nakasongola and MAAIF will work with these licensed service providers. MAAIF should engage Luwero Industries to explore the possibility of upgrading the facility to the standard required for pesticide disposal.***
- b. **Use of Hospital Incinerators:** Hospital incinerators have been identified as potential solutions but they do not meet the required standards. It is recommended that such incinerators **SHOULD NOT** be used for solid pesticides, agro-chemicals containing chlorine, sulphur or nitrogen, agro-chemicals containing metals and large quantities of agro-chemicals in general (FAO, 1996).
- c. **Utilization of Locally Fabricated Incinerators:** A local company Technology for Tomorrow Technology Ltd (T4T) [www.T4Tafrica.com](http://www.T4Tafrica.com) manufactures batch type incinerators with a trade name MAK. They come in three sizes: small (20 kg/hour), medium (30 kg/hour) and large (40 kg/hour). When considered over an operating period of say 12 hours, the destruction would be: small (240 kg), medium (360 kg) and

large (480 kg). Their operating temperature ranges from 850 to 1,080°C. The target of these incinerators has been disposal of medical waste and many of such incinerators are being used at major hospitals in Uganda. **Therefore, NARO could engage local fabricators to fabricate small-scale incinerators to help smallholder farmers to safely dispose obsolete pesticides.**

- d. **Incineration using research institutes facilities:** At NaCRRRI and National Agricultural Laboratory Kawanda, some items that are deemed unsuitable to be put in the normal waste bins in the laboratories, are placed in special waste-bin supplied in each of the laboratories and such items include used gloves, waste reagents, as well as wastes relating to agro-pesticides which are all collected and taken for incineration within the institutes.

#### **PMP IMPLEMENTATION FRAMEWORK**

The Government of Uganda and other stakeholders are responsible for ensuring that the pesticides used nationally are safe; are marketed, applied, handled and disposed of appropriately; and, if used judiciously, do not leave harmful residues on agricultural produce and in the environment.

#### **Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)**

The Crop Protection Department is in charge of all matters related to plant health, including issuance of import and export phytosanitary certificates for live plant material and horticultural crops, as well as for plant pest prevention or eradication programmes. The Department is also responsible for enforcing regulations on registration and the use of pesticides and other agrochemicals. The Pesticide and Fertilizer Control Unit (PFCU) under Crop Protection Department has the following functions:

- a. Initiate formulation and review of policies, laws, regulations strategies and plans related to agro-chemicals and their use in Uganda;
- b. Inspection, monitoring and enforcement of regulations and standards for compliance and to take the necessary action in cases of non-compliance;
- c. Equip, operate and build capacity to operate the Pesticide Analytical laboratory to establish accurate pesticide residues in plants used for food and other food and feed items;
- d. Develop and participate in pesticide residue monitoring plan to ensure adherence to the official Maximum Residue Levels;
- e. Conduct tests and efficacy field trials on agricultural chemical formulations to compliance to approved specifications and quality the registration process;
- f. Participate in National, regional and international fora to promote sound management of agricultural chemicals;
- g. Secretary to the National Agricultural Chemicals Board and its subsidiary body, the Agricultural Chemicals Control Technical Committee Build capacity for inspection and certification of agro-chemical trade in Uganda and assessing and seeking solutions to the trade constraints and use of the agro-chemicals;
- h. Establishing a database of registered and approved products, dealers, and premises; and
- i. Ensure that the public and the farming communities and dealership communities have access to information on safe and responsible use of agricultural chemicals and that the necessary training programs are in place

The Control of Crop Epidemics Section (CCES) has the following functions:

- a. Surveillance for weeds, pests and diseases that are of epidemic proportions;
- b. Mobilizing and organizing researchers, Local Government Staff, Local NGOs, and farmers to control weeds, epidemic pests (including migratory pests) and diseases;

- c. Purchasing Equipment, agro-chemicals and mobilizing stand-by funding to intervene in case of outbreaks of a weeds, pests or diseases;
- d. Forecasting, and providing an early warning on epidemic pests and diseases and sending alert messages to the stakeholders to be ready for outbreaks;
- e. Liaising with regional and international organizations in weed, pest and disease forecasting, monitoring and management;
- f. Training and building capacity for the Department, Local Governments and farming communities in pest and disease epidemic control;
- g. Creating awareness for weeds, crop pests and diseases, their management and follow up;
- h. Keeping and updating a database of information on epidemic pests and diseases and their control; and
- i. Formulating guidelines based on the Crop Protection act 1962, to guide lower administrative units to make by-laws to improve pest and disease control strategies in the affected districts.

***MAAIF will be the focal point for implementation of the PMP and shall coordinate its implementation through a harmonized information management system, financial mechanism and a monitoring and evaluation framework. The Ministry will:***

- e. Liaise with statutory bodies including URA and UNBS to ensure the importation of pesticides allowed for use in Uganda and to ensure they are of high quality;
- f. Liaise with NEMA and GAL to monitor pesticide contamination;
- g. Through its inspectors monitor condition of pesticide storage and transport; and
- h. Together with NAADS link-up with the district to collect empty pesticide containers.

***All pesticide shops will be inspected regularly by MAAIF inspectors to ensure that they are registered or licensed by ACB and that they follow safety regulations. Inspectors will also be required to take samples of pesticides that are suspected of being adulterated.***

**Ministry of Water and Environment:** The Directorate of Water Resources Management is responsible for managing the water resources of Uganda in an integrated and sustainable manner in order to secure and provide water of adequate quantity and quality for all social and economic needs for the present and future. The Directorate has two departments the Rural Water Supply (RWSD) and Urban Water and Sewerage Department (UWSD). ***The MWE through its Water for Production Department will collaborate with GAL in monitoring pesticide contamination of water bodies.***

**Ministry of Health:** Currently, the data on pesticide poisoning and accidents resulting from pesticides use or disposal is fragmented and still remains in the various newspapers that have reported such cases, and various hospital cases. There is the need to create awareness raising actions that will target the different pesticide users in order to avoid accidents and incidents. ***Under the ICDRP, the Department of Environmental Health in the Ministry of Health will be supported to collect and keep accurate statistics on pesticide poisonings events. In addition, it will create awareness raising actions that will target the different pesticide users in order to avoid such accidents and incidents***

**Role of NARO and its Research Institutes:** Agricultural research is carried out by the MAAIF regional research stations under NARO. The three largest stations include National Agricultural Research Laboratory -Kawanda (horticulture and post-harvest) and National Crop Resources Research Institute (NaCCRI) (root crops) both outside Kampala as well as NaSARRI Serere (dry land crops) in the northern zone of lower rainfall. Also important is the Crop Science Department of Makerere University which has support from the USAID IPM-



CRSP. NARO will coordinate all integrated agricultural research and development (R&D) activities required under the ICDRP. When pest problems occur that are novel or beyond the scope of NAADS in-house experts and the UCDA Extension Staff at the district level, advice will be obtained from NARO.

**National Environment Management Authority:** NEMA has Monitoring and Compliance Department as well as Environmental Inspectors who are expected to ensure compliance with permits, standards, regulations and all approval conditions.

**Agricultural Chemicals Control Board (ACB):** This is a statutory body established under the Agricultural Chemical Control Act 2006 and charged with overseeing, deciding or advising the Minister on the registration and control of agricultural chemicals and exercising responsibility for all policy matters affecting agricultural chemicals. However, the bulk of the enforcement, monitoring and technical capacity infrastructure rests in the hands of the staff in the directorates for crop and in particular department of crop inspection and certification. Apart from the ACB, the other agencies are likely to play enforcement and monitoring roles for chemicals use. However, the bulk of the technical capacity infrastructure rests in the hands of the ACB and staff in the directorates for crop and livestock protection. This body regulates: (i) herbicides; (ii) pesticides; (iii) fungicides; (iv) fertilizers; (v) insecticides; (vi) plant growth regulators; (vii) seed treatment chemicals; (viii) bio pesticides; (ix) chemicals for wood industry (petroleum and wood treatment); and (x) vector control. The Board also handles chemicals for the control of epidemic pests and diseases. The Agricultural Chemicals Board also gives permits to suitable and approved importers of agrochemicals. The Board also maintains a statistical database of these chemicals.

The responsibilities of the Agricultural Chemicals Board under the ICDRP will include:

- a. Registration of new pesticides required under the project.
- b. Licensing on new pesticides suppliers
- c. Development of the project specific IPM Pesticides List
- d. Work with MAAIF inspectors to enforce the pertinent laws

#### **Capacity of ACB**

- a. **MAAIF** has a low laboratory staff capacity with only one or two fully qualified staff and no laboratory equipment for assessing pesticides chemicals. In addition, the ACB is unable to regularly sit to assess the chemicals imported in the country and make decisions; and there are no regular field inspections and surveillance due to a limited budget. ***The ICDRP will set aside resources for laboratory and technical capacity enhancement for the key stakeholders and a plan to harmonize activities and share resources where capacity is higher. Also, this Plan has highlighted the need to train key staff at ACB.***
- b. **Uganda National Bureau of Standards (UNBS):** The UNBS is mandated to develop and promote standardization; quality assurance; laboratory testing; and metrology to enhance the competitiveness of local industry and to strengthen Uganda's economy and promote quality, safety and fair trade. UNBS also ensures quality imports through implementation of the Import Inspection and Clearance Regulations 2002 by carrying out inspection of imports to:
  - i. Safeguard the health and safety of the consumers and the environment against imported substandard, shoddy and hazardous products;
  - ii. Safeguard our industries from cheap counterfeit imports that can be a threat to our infant industries; and
  - iii. Ensure that Uganda's hard-earned foreign exchange is not wasted on shoddy, substandard and sometimes dangerous products, which may not only further impoverish the people but also cause ill health sometimes resulting in death.

- UNBS will work hand in hand with ACB, NDA, URA and MAAIF to address issues of pesticides quality.**
- c. **Uganda National Agro-Input Dealers Association (UNADA):** As a pre-requisite before registration, a dealer must attend, pass examination and obtain a certificate on safe use and handling of pesticide. The training is done on behalf of ACB by Makerere University (Crop Science Department). UNADA only mobilizes their members to be trained. **Under ICDRP, funding will be provided to strengthen MAAIF to work with UNADA to address the issue of fake and adulterated pesticides as well as to train more UNADA members in safe agrochemical use.**
  - d. **Role of NGOs:** NGOs will be fully recognized and brought on board as serious partners in all efforts to ensure safe use of pesticides. In terms of capacity, NGOs in Uganda lack the financial and technical resources required to adequately manage pesticides and related issues. Therefore, there is need for a concerted effort to develop their capacity and other interested players to undertake public awareness on the hazards associated with pesticides and how to safely handle them. *Under the ICDRP, the NGOs working with farmers will:*
    - i. Raise awareness among the smallholder farmers about the dangers of pesticide use;
    - ii. Work with extension staff to teach farmers about safe pesticide use and storage;
    - iii. Work with farmers to develop community monitoring of the use and impacts of pesticides in order to alert the authorities as to the health and environmental impacts of pesticide use; and
    - iv. Empower the smallholders through training and other support to engage with the local government to address their concerns on pesticides use.

### **Pest Monitoring Plan**

Successful implementation of the ICDRP Integrated Pest Management Plan in the project locations will require regular monitoring and evaluation of activities undertaken by the farmers to be involved in the project. Indicators that require regular monitoring and evaluation during the programme implementation include the following:

- a. Number of farmers engaged in IPM capacity building in the project locations:
- b. Number of farmers who have successfully received IPM training in IPM methods
- c. Number of trainees practicing IPM according to the training instructions
- d. Number of women as a percentage of total participating in IPM and successfully trained
- e. Number of youth as a percentage of total participating in IPM and successfully trained
- f. Number of farmers as a percentage of total applying IPM
- g. Rate of IPM adoption (number of people as a percent of total) every year
- h. Improvement in farm production due to adoption of IPM as a percent of production without IPM
- i. Improvement in the health status of farmers
- j. Extent to which crops and livestock are produced using chemical pesticides compared with total crop production
- k. Efficiency of pesticide use and handling
- l. Reduction in chemical pesticide poisoning and environmental contamination
- m. Number of IPM participatory research project completed
- n. Overall assessment of activities that are going according to IPMP; activities that need improvement; and remedial actions required.

**Table 14: Integrated Pest Management and Monitoring Plan**

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
<b>1.0 Positive impacts of chemical pesticides</b>							
1.1	Increase in crop and livestock yield		Implement a long term IPM programme to sustain productivity and combat negative effects of chemical pesticides.	ICDRP, participating institutions and farmers <b>Cost included in the IPMP overall cost</b>	IPMP	NARO/MAAIF	Bi-Annual
1.2	Increase in economic growth		Implement a long term IPM programme to sustain productivity and combat negative effects of chemical pesticides.	ICDRP, participating institutions and farmers <b>Cost included in the IPMP overall cost</b>	IPMP	NARO/MAAIF	Bi-Annual
<b>2.0 Negative Impacts of chemical pesticides</b>							
2.1	Soil degradation	Persistent use of chemical pesticides	Apply soil conditioning measures which include IPM Train farmers in proper handling and application of pesticides.	Farmers	IPMP	NARO/MAAIF	Quarterly

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
2.2	Poisoning of non-target species including natural biological agents	Lack of knowledge of chemical pesticide potency.  Equipment malfunction Use of wrong type of equipment. Wrong time and method of application (spraying)	Supervise and control use of chemical pesticides so that only approved and recommended ones are used. Provide PM Equipment. Regularly maintain and clean equipment as recommended by supplier. Dispose old equipment as recommended by manufacturer. Provide recommended protective gear. Use recommended and appropriate protective gear. Conduct trainings in IPM	NARO and participating farmers	IPMP	NARO/MAAIF	Quarterly
2.3	Health and safety risks	Exposure to pesticides handling.	Provide protective clothing and ensure it is used.	Agro- dealers ❖ Transporters ❖ Farmers	Labor regulations OHS Act 2006	Ministry of Labour, Gender and	Bi-Annual

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
		Routine medical examination	Train farmers in proper.			Social Development-MoLGSD	
2.4	Water, soil and environmental pollution	Inappropriate building for storage of pesticides. Cleaning of equipment, Disposal of remains of pesticides. Disposal of containers and equipment	Construct suitable warehouse. Construct bio- beds, draining channels and draining dams. Use chemical remains to re-spray. Clean equipment in one designated place. Take regular stock of pesticides. Use IPM. Train farmers not to spray toxic chemicals close to water sources. Train farmers to maintain spray equipment in safe operational order.	Pesticides Transporters and Suppliers. NARO/Farmers ICDRP/Farmers	Pesticides and equipment manufacturer's recommendations. Water pollution standards.	NEMA MWE DEOs	Quarterly
Air pollution and contamination	Exposure of pesticides to air. Disposal of pesticides	Store pesticides in closed containers Dispose chemical	Pesticides Suppliers Farmers	Pesticides and equipment manufacturer's recommendations.	NEMA	Quarterly	Air pollution and contamination

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
	remains in the open. Disposal of pesticides in containers and equipment in the open	remains according to supplier recommendations. Train farmers in appropriate spraying techniques to avoid chemicals being blown away by wind. Train farmers to maintain spray equipment in efficient operational order		Air pollution standards.			
		Bad housekeeping	Provide adequate and enclosed storage space for pesticides	Agro-dealers	MAAIF regulations, Manufacturer's Guidelines.	MAAIF	Half yearly
		Illegal disposal of pesticides	Prohibit disposal of pesticides wastes into open dumps where they will be blown away by wind	Agro-dealers NARO/MAAIF	NEMA Pesticides Act	Districts	Half yearly

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
		Equipment malfunction Wrong type of equipment.	Regular maintenance of equipment.	Farmers NARO/MAAIF	Manufacturer's recommendations.	NEMA	Annually
		Time and method of application (spraying)	Time and method of application (spraying)	Time and method of application (spraying)	Time and method of application (spraying)	Time and method of application (spraying)	Time and method of application (spraying)
2.6	Health risk from chemical pesticide misuse (over /under use)	Lack of appropriate knowledge	Training and awareness campaigns	ICDRP	Pesticide manufacturers regulations, IPMP	NEMA	Annually
2.7	Accidental or Intentional poisoning	Improper labelling or storage Frustration, Social pressures.	Label and store chemicals in properly labelled shelves Ensure responsible, mentally sound and mature persons are given charge and control of pesticides. Restrict accessibility to pesticides.	Farmers Agro-dealers	Pesticides Act	NEMA MoLGSD	Annually

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
			Spot checking				
2.8	Pest resistance	Lack of appropriate knowledge in pesticides application	Train farmers in correct application of pesticides. Initiate education programmes	Farmers MAAIF	Pesticides Act	MAAIF	Half yearly
<b>3.0 Positive Impacts of Biological Impacts of Biological Control Agents</b>							
3.1	Reduced environmental and health risks		Establish demonstration plots to disseminate information on environmental and health benefits of biological control agents to the communities for them to appreciate the advantages	NARO	NEMA	-MAAIF	Quarterly
3.2	Reduction in time spent on application of chemical pesticides		Prepare an inventory of indigenous and established biological control methods and conduct community awareness seminars to enhance and	NARO	IPMP	Department of Land Resources	Annually



N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
			spread knowledge base.				
3.3	Resistance to pests through improved varieties/species	Rural people have a tendency of resisting to introduction of new varieties and sticking to traditional seed varieties.	Awareness campaigns on the benefits of new and improved seed varieties, which are resistant to pest will help reduce application of chemical pesticides	NARO	IPMP	MAAIF	Annually
3.4	Increase in soil stability and reduction of soil erosion	Increasing tree cover as biological control of pests will result in increase in soil stability and reduction of erosion.	Conduct awareness campaigns on the importance of using new and improved and pest resistant seed varieties in controlling pests	NARO	IPMP	MAAIF	Annually
<b>4.0 Negative Impacts of Biological Control Agents</b>							
4.1	Risk of damage to crops	The slowness of biological agents to act may frustrate IPM programmes as farmers are used to the rapid results	Educate farmers on the long-term benefits of the biological methods to facilitate their adoption; and Phase transition from	NARO	IPMP	MAAIF	Annually

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
		of chemical pesticides	biological to IPM methods to ensure no appreciable loss of production during transition				
<b>5.0 Positive Impacts of Mechanical Methods</b>							
5.1	Reduced pollution on the environment		Train farmers on the appropriate and efficient use of simple farm implements to significantly minimize environmental pollution	NARO	IPMP	MAAIF	Annually
<b>6.0 Negative Impacts of Manual methods</b>							
6.1	Human health risks	Snake bites, attacks Non-chemical methods are generally slow.	Provide protective clothing to workers and ensure it is properly used; Train farmers in proper operations and handling of farm equipment; and Promote IPM to replace mechanical methods.	NARO	N/A	NARO/MAAIF	Annually

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
6.2	Poor crop development		Encourage use of transparent bagging to allow entry of light. Train farmers in timely and appropriate use of pest management techniques to protect maize from the great grain borer and other pests; and to protect other crops from pest damage	NARO	N/A	MAAIF	Annually
<b>7.0 Positive Impacts of IPM</b>							
7.1	Increase in agricultural yields			NARO	IPMP	MAAIF	Annually
7.2	Contribution to Food Security	Non-chemical methods are generally slow	Train pesticides marketers in selection and handling of approved pesticides Train farmers in the appropriate application of the	NARO	IPMP	MAAIF	Annually

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
			various IPM practices Educate farmers on preservation techniques and timeframes of different integrated pest management options.				
7.3	Saving in foreign exchange	Banned chemicals	Train pesticides suppliers in selection of appropriate pesticides to be eligible for supplying to UNADA; Train farmers in the appropriate application of the various IPM practices to reduce application of chemical pesticides; and Enforce regulation prohibiting importation of banned chemical pesticides	NARO	Pesticides Act	MAAIF	Quarterly

N°.	Potential Issues/Concerns	Cause of Concern	Control/Mitigation Measure	Responsible Person/Institution and Cost per year per district (\$)	Standards/Regulation	Monitoring Institution and Cost per district per year	Monitoring Frequency
7.4	Contribution to offsetting rural/urban migration	Banned chemicals	Enforce regulation prohibiting importation of banned chemical pesticides; Educate farmers on harmful consequences of banned chemical pesticides; and Assist local communities to establish cooperatives and to market produce to potential markets for additional income.	Farmers NARO MAAIF Districts	Pesticides Act	MAAIF	Quarterly
7.5	Improved environmental protection		Enforce regulation prohibiting importation of banned chemical pesticides; and Educate farmers on harmful consequences of banned chemical pesticides.	NARO	IPMP	NARO	Annually

## Capacity, Training Needs and Budget for PMP Implementation

### Capacity Needs

IPMP is a knowledge intensive and interactive methodology which calls for a precise identification and diagnosis of pests and pest problems. Comprehending ecosystem interplays equips farmers with biological and ecological control knowledge and assists them in making pragmatic pest control decisions.

The success of IPMP is largely dependent on developing and sustaining institutional and human capacity to facilitate experiential learning. Experiential learning is a prerequisite to making informed decisions in integrating scientific and indigenous knowledge. This assists in tackling district, ward and village specific problems. Ineffective communication between farmers, extension agents and researchers from research institutes and universities has often translated into poorly-targeted research or to poor adoption of promising options generated by research. Essentially, the full potential of agricultural research is compromised.

Closer farmer-research investigator interaction, adaptive research and participatory learning approaches in capacity building efforts serves as a remedy to narrowing this gap, making research results more applicable to farmers. Farmers must at least be trained in:

- a. Biological and ecological processes underpinning IPM options;
- b. The practical application of newly acquired knowledge, to choose compatible methods to reduce production and post-harvest losses, through frequent field visits, meetings and demonstrations; and
- c. Adaptive research trails.

Capacity building will be achieved through farmer-based collaborative management mechanisms where all key stakeholders shall be regarded as equal partners. Beneficiary farmers shall be the principal actors facilitated by other actors from research institutes, academic institutions, sector ministries, NGOs, etc. as partners whose role will be to facilitate the process and provide technical direction and any other support necessary for the implementation of IPM.

**Table 15: Training areas for key role players and stakeholders of IPM**

<b>Participants in the training</b>	<b>Roles of participants in IPMP</b>	<b>Training content</b>	<b>Cost US\$</b>
<p>National level institutions</p> <ul style="list-style-type: none"> <li>a. MAAIF</li> <li>b. NARO</li> <li>c. MoH</li> <li>d. NEMA</li> <li>e. ACB</li> <li>f. DEOs</li> <li>g. Private sector.</li> </ul>	<ul style="list-style-type: none"> <li>a. Providing capacity and policy guidance and/or oversight for IPMP implementation;</li> <li>b. Monitoring and evaluation of IPMP implementation;</li> <li>c. Providing logistical and technical support for training;</li> <li>d. Monitoring of IPM inputs supply by the dealers; and</li> <li>e. Monitoring illegal stock of pesticides in boarder regions of Uganda.</li> </ul>	<ul style="list-style-type: none"> <li>a. General overview of the project;</li> <li>b. Roles of IPMP stakeholders;</li> <li>c. Institutional IPMP supportive roles in IPMP implementation;</li> <li>d. IPMP and environmental and social management pesticide regulation on:               <ul style="list-style-type: none"> <li>i. imports,</li> <li>ii. transportation,</li> <li>iii. use,</li> <li>iv. registration and disposal of residues.</li> </ul> </li> </ul>	55,000
<p>Training of Trainers:</p> <ul style="list-style-type: none"> <li>a. NARO</li> <li>b. ACP</li> <li>c. MAAIF, Service Providers and NGOs</li> </ul>	<ul style="list-style-type: none"> <li>a. Supervising IPMP implementation.</li> <li>b. Preparation of IPM training materials.</li> <li>c. Training extension workers.</li> <li>d. To be fully abreast with ICDRP IPMP and to conduct research in IPM.</li> </ul>	<ul style="list-style-type: none"> <li>a. General overview of the project and the IPMP for the ICDRP;</li> <li>b. IPMP stakeholders and their roles;</li> <li>c. Pesticides (pes, classification, labelling registration etc.)</li> </ul>	40,000
<p>District level</p> <ul style="list-style-type: none"> <li>a. District staff</li> <li>b. Extension workers</li> <li>c. Members of the extension services.</li> <li>d. Farmers</li> </ul>	<ul style="list-style-type: none"> <li>a. Supervision of farmers and provision of extension support;</li> <li>b. Preparation of farmer training materials, leaflets, demonstration material, radio and TV messages etc,</li> <li>c. Training farmers and community leaders in IPM and safety,</li> <li>e. Organizing farmers for participatory learning and knowledge sharing events.</li> </ul>	<ul style="list-style-type: none"> <li>a. General overview of the project and the roles of its stakeholders in IPM;</li> <li>b. Pesticides (types, classification, labelling registration etc.),</li> <li>c. Skills in preparing IPMP work plans and budgets.</li> <li>d. Pesticides and environmental and social impacts; and mitigation measures.</li> <li>e. Indigenous and other pest management methods.</li> <li>f. Safety and precautionary measures while handling pesticides.</li> <li>g. Management of outbreak and migratory pests.</li> </ul>	60,000

		<ul style="list-style-type: none"> <li>h. Pesticide regulation on: imports, transportation, use, registration and disposal of residues.</li> <li>i. Farmer/Trainer coordination</li> </ul>	
Farmers	<ul style="list-style-type: none"> <li>a. Attending IPM trainings and demonstrations</li> <li>b. IPMP implementation</li> </ul>	<ul style="list-style-type: none"> <li>a. General overview of the project and the IPMP for the ICDRP.</li> <li>b. IPMP stakeholders and their roles.</li> <li>c. Pesticides (types, classification, labelling registration etc.).</li> <li>d. Pesticides and environmental and social impacts; and mitigation measures.</li> <li>e. Indigenous and other pest management methods.</li> <li>f. Safety and precautionary measures while handling pesticides.</li> <li>g. Management of outbreak and migratory pests.</li> <li>h. pesticide regulation on: imports, transportation, use, registration and disposal of residues.</li> <li>i. Farmer/trainer cooperation</li> </ul>	55,000
<b>Total</b>			<b>210,000</b>



## ESTIMATED PMP BUDGET

No.	Item/Activity	Total (USD.)
a.	Capacity building & Awareness (training programs i.e. extension staff, PCU, farmers)	210,000.00
b.	Support to MAAIF Dept. of Quarantine	150,000.00
c.	• Support to ACB	150,000.00
d.	Support to NADA to streamline trade in agro-inputs	60,000.00
e.	Crop pest/vector surveillance activities	35,000.00
f.	PPE (hand gloves, gas-mask, safety boot and overall wear)	45,000.00
<b>GRAND TOTAL</b>		<b>• 575,500.00</b>

## CONCLUSION

Overall, public awareness related to the sound management of agro-chemicals in the country can be considered low. This is said to be attributed to weak regulatory and extension arms in the sector leading to largely unregulated trade in agro-chemicals characterized now with proliferation of non-compliant agro-dealers outlets for.

Most of the agro-chemicals distributors and users are seem unaware of the Materials Safety Data Sheets (MSDS), nor do they know how to use them. The entities also do not provide training to their personnel on the sound management of chemicals and wastes or provide personal protection gear.

While the NEMA has laws containing significant provisions that could be used to protect the environment and human health (with a focus on agro-chemicals as well), its lack of effective implementation means that its provisions remain largely inoperative. Therefore, it is imperative for NEMA and other institutions with a stake on sustainable management of agro-chemicals prioritize the implementation of its mandate, focusing on a few key areas such as and including sound management of agro-chemicals through which, the protection of the environment and human health could be maximized.

Evidently, there is lack of infrastructure for the safe disposal of used/expired or obsolete agro-chemicals in the country which leaves the option of landfill sites which is outside the standard practice in management of such waste. Therefore, deliberate investments be made to put in place, state of art facility for management of hazardous agro-chemicals wastes in particular and other related wastes.