Republic of Uganda

Ministry of Agriculture, Animal Industry and Fisheries

AGRICULTURE CLUSTER DEVELOPMENT PROJECT

Environmental and Social Management Framework

Prepared By

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September, 2014

TABLE OF CONTENTS

List of Figures

Glossary of Terms

Cumulative impacts/effects: The total effects on the same aspect of the environment resulting from a number of activities or projects.

Developer/Proponent/Sponsor: the entity – person/ company/ agency -proposing to develop/implement/install a new project/sub- project or expand an existing project under the ACDP.

Direct impacts: An effect on the environment brought about directly by the ACDP projects.

Disclosure: Information availability to all stakeholders at all stages of the development of projects.

Environmental impact assessment (EIA): A comprehensive analysis of the project and its effects (positive and negative) on the environment and a description of the mitigation actions that will be carried out in order to avoid or minimize these effects.

Environment: physical, biological and social components and processes that define our surroundings.

Environmental Monitoring: The process of examining a project on a regular basis to ensure that it is in compliance with an Environmental Management Plan (EMP).

Grievance: An issue, concern, problem, or claim (perceived or actual) that an individual or community group wants a company or contractor to address or resolve.

Involuntary resettlement: The forceful loss of land resources that requires individuals, families and/or groups to move and resettle elsewhere.

Impact: A positive or negative effect that a project has on an aspect of the environment.

Indirect impact: A positive or negative effect that a project indirectly has on an aspect of the environment.

Integrated Pest Management (IPM) – Use of a variety of biological, cultural, and chemical control methods in a cohesive management scheme designed to maintain pest populations at levels below those causing economic injury.

Irrigation" is the practice of maintaining root zone moisture at levels necessary to ensure optimal growth conditions for a given crop at a particular stage of growth when soil moisture would otherwise be inadequate.

Irrigation Infrastructure comprises the physical works necessary to abstract water from its natural location to the root zone of the crop.

Lead Agency: The agency with primary responsibility for the protection of the enAvironment. For instance, the lead agency for environment matters in Uganda is Uganda Environment Management Authority (NEMA).

LD_{50} is an abbreviation for "Lethal Dose, 50%" or median lethal dose. It is the amount of the substance required (usually per body weight) to kill 50% of the test population.

Mitigation measures: The actions identified in an EIA to negate or minimize the negative environmental impact that a project may have on the environment.

Pollution: contamination altering the state of purity (e.g. chemical effluent discharge into a surface water body).

Pest Management – Any deliberative action to prevent or reduce the density or harmful effects of a pest population

Pesticide – From "pest" and "cide" (a Latin derivative meaning killer), a natural or synthetic chemical agent that kills or in some ways diminishes the action of pests. It is a general term that includes herbicides, insecticides, nematicides, fungicides, antibiotics, rodenticides, plant growth regulators, etc.

Pesticide Management – Deliberative actions to reduce the harmful effects of pesticides; includes legislation and regulations as well as safe application, storage, and disposal.

Pesticide Resistance – Genetic qualities of a pest population that enable individuals to resist the effects of certain types of pesticides that are toxic to other members of that species.

Pests – Commonly include harmful insects, mites, ticks, weeds, bacteria, fungi, rodents, birds, and others.

Project and sub-project: a set of planned activities designed to achieve specific objectives within a given area and time frame. With respect to the ACDP, Project, the terminology can be confusing. The project in World Bank terms is the ACDP project; and all proposals subject to intermediary loans are subprojects.

Project Brief: The initial submitted document to NEMA to initiate the process that will lead to the issuance of the EIA certificate of approval.

Scoping: The initial stage in an environmental assessment that determines the likely major environmental parameters that will be affected and the aspects of the project that will bring upon these effects

Screening: An initial step when a project is being considered for environmental assessment. The screening is the determination of the level of assessment that will be conducted.

Significant effect: An important impact on an aspect of the environment.

Stakeholder: Any person or group that has an interest in the project, and the environmental effects that the project may bring about.

Acronyms

ACB	Agricultural Chemicals Board
ACDP	Agriculture Cluster Development Project
ACE	Area Cooperative Enterprises
AfDB	African Development Bank
ARCC	African and Latin American Resilience to Climate Change
ASPS	Agriculture Sector Programme Support
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ATAAS	Agricultural Technology and Agribusiness Advisory Services
CARs	Community Access Roads
CBD	Convention on Biodiversity
CBWMP	Community Based Wetlands Management Plan
CCES	Control of Crop Epidemics Section
CDO	Community Development Officer
CITES	Convention on International Trade on Endangered Species
CMSP	Cluster Multi-Stakeholder Platforms
COMESA	Common Market for Eastern and Southern Africa
CGV	Chief Government Valuer
DAO	District Agriculture Officer
DCR	Director Crop Resources
DRC	Democratic Republic of Congo
DPO	District Production Officer
DSIP	Development Strategy and Investment Plan
DWD	Directorate of Water Development
EAAPP	East Africa Agricultural Productivity Project
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ELU	Environment Liaison Unit
IFC	International Finance Corporation
ILO	International Labor Organization
IMDG	International Maritime Dangerous Goods
IPM	Integrated Pest Management
ISDS	Integrated Safeguards Data Sheet
ISTA	International Seed Testing Association
IVM	Integrated Vector Management
EAOPS	East African Organic Products Standards
ELU	Environmental Liaison Unit
EPRC	Economic Policy Research Centre
ERP	Economic Recovery Programme
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization of the United Nations
FHH	Female Household
GAL	Government Analytical Laboratory
GDP	Gross Domestic Product
GHG	Green House Gases
IDA	International Development Association
IPMCRSP	Integrated Pest Management Collaborative Research Support Programme

IPPC	International Plant Protection Convention
IOE	International Office of Epizootics
LD50	Lethal Dose 50%
LGRC	Local Grievance Redress Committee
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MHH	Male Headed Households
MoFPED	Ministry of Finance, Planning and Economic Development
MoGLSD	Ministry of Gender, Labor and Social Development
MoTIC	Ministry of Trade, Industry and Cooperatives
masl	Meters Above Sea Level
MDG	Millennium Development Goals
MISR	Makerere Institute of Social Research
MTEF	Mid Term Expenditure Framework
MUK	Makerere University Kampala
NARP	National Agricultural Research Policy
NAPA	National Adaption Plan of Action
NDP	National Development Plan
NE	North East
NEA	National Environment Act
NEMA	National Environment Management Authority
NEMP	National Environment Management Policy
NERICA	New Rice for Africa
NGOs	Non-Government Organizations
NSCS	National Seed Certification Services
NUCAFE	National Union of Coffee Agribusiness Enterprises
NWSC	National Water Sewerage Corporation
OHS	Occupational Health and Safety
OPD	Out Patient Department
PCU	Project Coordination Unit
PFCU	Pesticide and Fertilizer Control Unit
PIC	Prior Informed Consent
PMA	Plan for Modernization of Agriculture
PMP	Pest Management Plan
PCRs	Physical Cultural Resources
PDO	Project Development Objective
POPs	Persistent Organic Pollutants
PRL	Pesticide Residue Laboratory
RPF	Resettlement Policy Framework
RPO	Rural Producer Organization
PQS	Phytosanitary Quarantine Services
SACCO	Saving and Credit Cooperative
SMC	Sound Management of Chemicals
SQSP	SAICM Quick Start Programme
ToTs	Training of Trainers
UBOS	Uganda Bureau of Standards
UCA	Uganda Census of Agriculture
UCDA	Uganda Coffee Development Authority
UNBS	Uganda National Bureau of Standards
UNCTAD	United Nations Conference on Trade and Development

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCC	United Nations Framework Convention on Climate Change
UNHS	Uganda Household Survey
URA	Uganda Revenue Authority
USAID	United States Agency for International Development
VPC	Village Peace Committees
WB	World Bank
WFP	World Food Programme
WHH	Women Headed Households
WHO	World Health Organization
ZARDI	Zonal Agricultural Research Development Institute

EXECUTIVE SUMMARY

AGRICULTURE CLUSTER DEVELOPMENT PROJECT

Project Development Objective

The objective of the proposed project is to raise productivity, production, and commercialization of selected agricultural commodities in specified clusters of districts across the country. This will raise farm and agribusiness incomes while substantially lowering transactions costs in markets for agricultural commodities. Special attention will be given to raising productivity and marketed production on small-scale farming operations in the project clusters. Special attention will also be given to proactively ensure inclusion within project activities of farming households (and agribusiness firms) in which women and youth play a prominent role in the management of the farm (and/or agribusiness) enterprise. Five focus commodities (maize, beans, rice, cassava and coffee) have been selected according to the priorities articulated in the operationalization framework for the non-ATAAS components of the Development Strategy and Investment Plan (DSIP).

Target Areas

The ACDP will be specifically implemented in the Districts of Masaka, Mpigi, Rakai, Iganga, Bugiri, Namutumba, Pallisa, Tororo, Butaleja, Kapchorwa, Bukwo, Mbale, Soroti, Serere, Amuru (including Nwoya), Gulu, Apac (including Kole), Oyam, Lira (including Dokolo), Kabarole, Kamwenge, Kasese, Kyenjojo (including Kyegwegwa), Mubende, Kibaale, Hoima, Masindi, Kiryandongo, Ntungamo, Kabale, Bushenyi, Isingiro, Nebbi, Arua (including Nyadri), and Yumbe.

Project Components

The activities and investments to be supported under the proposed project are organized into four components. Component 1 would support activities related to expanding access to and use of key agricultural inputs. Component 2 would support the rehabilitation and expansion of existing small irrigation schemes for rice, assist formation of water user groups and look at water management and conservation. Component 3 would support activities and investments to improve post-harvest handling of the selected commodities and to improve the efficiency of output markets for these commodities and would also support measures to eliminate bottlenecks and trouble spots in rural access roads and market places. Component 4 would support capacity building and operations of the key institutional actors (particularly MAAIF, District governments, farmer organizations, and cluster committees). Component 4 would also support activities to develop, improve, and implement policies and regulatory frameworks for the production and marketing of the 5 selected commodities.

Project Financing

The overall public sector cost of the project is estimated at US$150 million. As indicated in the Table below, the entire US$150 would be funded from IDA Investment Project Financing.

Component	IDA budget (USD million)	%
Component 1: Agricultural Inputs (seeds, planting materials & fertilizers and pesticides)	65	43
Component 2: Agricultural water management	36	24
Component 3: Post-harvest handling, storage, value addition and market linkages	34	23
Component 4: Project Management and Regulations	15	10
TOTAL	**150**	**100**

Key Project Activities

Irrigation Infrastructure – The project is proposed to expand and develop selected gravity irrigation schemes in lowlands totaling 6,000 ha of irrigated land in the 10 targeted Districts in cluster 2 (Iganga, Bugiri and Namutamba), cluster 3 (Pallisa, Tororo and Butaleja), cluster 5 (Soroti and Serere), cluster 6 (Amuru and Nwoya), cluster 7 (Lira), and cluster 10 (Hoima). The exact locations for the new irrigation schemes have not yet been selected, though they are expected to fall within the above-listed 10 districts for rice commodity. Doho and Mobuku irrigation schemes are the only ones whose activities and locations have already been defined. In some cases, a scheme could lie astride two districts.

The following works are envisaged in the existing schemes: (i) expansion of Mubuku irrigation scheme (100 ha) in Phase IIB expansion area with existing diversion weir (on Sebwe River) and main canal, will entail establishment of the secondary irrigation and drainage network. (ii) expansion of Doho rice irrigation scheme (Bwirya and Lwoba sectors which total 900 ha and currently cultivated by out-growers), will entail construction of the irrigation and drainage networks from the existing diversion weir and if deemed necessary construct a protection dyke against the flooding from Manafwa River. Water for irrigation will be abstracted from the Nile basin watershed which is shared by 10 countries namely, Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. On the basis of maximum 35,000 m3/ha/year as gross water requirements for rice production, the impact would represent 210 m3/year or 0.5% of the total renewable water resources (39 km3/year). Therefore, the water abstraction volume is expected to be minimal.

The project will prioritize expansion of existing schemes (about 1,000 ha) and the development of small scale schemes (totaling about 3,000 ha) and medium scale schemes (totaling about 3,000 ha), and will not support construction of large scale irrigation structures in order to minimize extent of environmental and social impacts.

In general, the development of lowlands gravity irrigation schemes will be composed of the following infrastructure: diversion weir from the river, main canal from the weir to the irrigated area, distribution network canals, drainage network, internal road, protection dykes (in case of flooding risk), and land leveling. Other amenities/equipment required for the irrigation infrastructure will be part of irrigation infrastructure. Dams are not required because the irrigation schemes will target permanent streams/rivers with enough water for irrigation and downstream use.

Access Roads Improvement – The project will not support opening up 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 reshaping (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.

Storage Facilities – The market infrastructure under component 3 will include rehabilitation and/or construction of storage facilities/structures (network of warehouses and feeder stores) mainly at the Area Cooperative Enterprises (ACE) level of 500 metric tons each. At this moment in time, it has not yet been determined whether central warehouses of a larger capacity (5000 tons) may be needed.

THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

Purpose and Scope

This ESMF provides guidance on how environmental and social aspects shall be identified, assessed and managed. Specific locations have not been clearly identified at this stage, hence it provides a framework to assist project implementers to screen the projects and institute measures to address adverse environmental and social impacts.

Preparation of ESMF

The ESMF has been prepared in accordance with applicable World Bank safeguard policies and Uganda environmental impact assessment guidelines, and involved data literature reviews; field reconnaissance studies, public consultations and discussions with relevant sector institutions, including districts, private sector, statutory agencies and local communities.

KEY ENVIRONMENT AND SOCIAL BASELINE

Biological Environment

Vegetation – The common natural vegetation in the wetlands consists of reeds Phragmites, floating grass Vossia and various species of sedge (Cyperaceae), including papyrus Cyperus papyrus. Others include vossia cuspidate and Typha domigensis.

Birds – The common birds species in the major wetlands earmarked for rice schemes include the Pink-backed Pelican, Long-tailed Cormoran, Little Bittern, Grey Heron, Goliath Heron, Black-headed Heron, Common Squacco Heron, Cattle Egret, Green-backed Heron, Little Egret, Yellow-billed Egret, African Open-billed Stork, Yellow-billed Stork, Sacred Ibis, Fulvous Whistling Duck, Lesser

Moorhen, Black Crake, African Jacana, Long-toed Plover, Spur-winged Plover, Common Sandpiper, and the Black-winged Stilt among others.

Fish – The most common type of fish includes catfish, Lung fish Tilapia and Clarius are observed in major wetlands. Tilapia is common in both permanent and seasonal water because it migrates to seasonal water during flooding.

Economic and Livelihood Activities

Agriculture is the main economic activities in the proposed ACDP areas with a bias towards food crops such as beans, sorghum, millet, maize, cassava, sweet potatoes, Irish potatoes, ground-nuts, bananas; cash crops such as coffee; fruits and vegetables, such as passion fruits, tomatoes, onions, pineapples and cabbage in addition to cattle keeping.

Utilization of Wetlands

The findings of the field reconnaissance surveys indicate that the surrounding communities of Doho, Lwoba, Bwirya, and other wetlands are largely dependent on these wetlands as a source of income and food security, although in varying degrees in the direct, indirect, option and existence values/benefits to the communities as explained below. These wetland areas are cultivated with food crops e.g. rice, beans, maize, sorghum, cassava and bananas, sweet potatoes, Irish potatoes, ground nuts, soya beans, vegetables and fruits, animals are also kept and they include cattle, goats and sheep.

POLICY FRAMEWORK

Under the project the following policies are triggered and they include:

a. The National Environment Management Policy 1994 (NEMP);
b. The National Development Plan 2010-2015;
c. The Uganda Vision 2040;
d. Agricultural Sector Development Strategy and Investment Plan 2010/11-2014/15;
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 Trade Policy, 2006;
j. The National Land Use Policy ;
k. The National Gender Policy, 1997;
l. The National HIV/AIDS Policy, 2004;
m. The Cassava Development Policy, 2007;
n. The National Irrigation Master Plan for Uganda (2010-2035); and
o. The National Policy for the Conservation and Management of Wetland Resources, 1995

The Legal Framework

The applicable legal instruments to the ACDP project include:

a. Constitution of the Republic of Uganda, 1995

b. The National Environment Act, Cap 153
c. The Agricultural Chemicals (Control) Act, No. 1 of 2006
d. The Occupational Safety and Health Act, 2006
e. Control of manufacture, etc. of agricultural chemicals Act Cap 29
f. The National Agricultural Advisory Services Act, 2001
g. The Agricultural Seeds and Plants Act (Cap 28)
h. The Plant Protection Act (Cap 31)
i. The National Agricultural Research Act, 2005
j. Environmental Impacts Assessment Regulations, 1998
k. National Environment (Noise Standards & Control Regulations), 2003
l. National Policy for the Conservation and Management of Wetland Resources, 1995
m. National Environment (Waste Management) Regulations, 1999
n. The Local Governments Act (Cap 243)
o. Land Act, Cap 227
p. Water Act, 1995
q. Water Abstraction Regulation, 1998
r. The Public Health Act, 1964
s. Access to Information Act No. 6 of 2005
t. External Trade Act, Cap 88
u. Uganda National Bureau of Standards Act, Cap 327
v. The Workers Compensation Act, Cap 225

Related International Conventions and Agreements

a. The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal 1989;
b. Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and pesticides in International Trade, 2004;
c. The International Maritime Dangerous Goods (IMDG) Code;
d. Strategic Approach to International Chemicals Management (SAICM);
e. IFC EHS Guidelines for Pesticide Manufacturing, Formulation, and Packaging;
f. FAO Guidelines on Good Practice for Ground Application of Pesticides, 2001

World Bank Safeguard Policies

The Project has been assigned Environmental Category B. The Project triggers Environmental Assessment (OP 4.01), Natural Habitats (OP 4.04) and Pest Management (OP 4.09). The Bank's Policy on Involuntary Resettlement (OP/BP 4.12) is triggered and a Resettlement Policy Framework has been prepared to mitigate any associated risks. A Resettlement Action Plan (RAP) will be prepared for Doho and Mukubu irrigation schemes after completion of project engineering design. The RPF/RAPs will be used as planning and monitoring tools for addressing all land acquisition issues. OP 7.50 on International Waters is also triggered since water for irrigation will be withdrawn from the Nile basin watershed which is shared by 10 countries, namely Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. In addition OP. 4.11 is also triggered because of Component 2 and 3 which have civil works aspects that may affect Physical Cultural Resources.

POTENTIAL PROJECT IMPACTS AND MITIGATION MEASURES

Positive Impacts

The project will have a number of positive social impacts for people such as: creation of employment opportunities for the local workers to be recruited on the project especially amongst neighboring communities which will be a positive impact; there will be improved accessibility, trade and commercial opportunities after the planned rehabilitation of community access roads which will enhance commercial opportunities in the beneficiary areas; ACDP will provide a source of income to the local communities through leasing of their lands as sources of construction materials for rehabilitation for community access roads. In addition, there will be improved delivery of social services through improvement of accessibility to markets and other public and social amenities services such as health and education. ACDP will provide a source of additional income for women during rehabilitation of community access roads through employment of women to work on the roads through which, women will be able to earn additional income for their personal and domestic needs.

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. ACDP will further promote sustainable water use through improved rehabilitation of irrigation infrastructures which will promote sustainable water management practices for increased productivity of the selected commodities; the planned expansion of irrigated lands will further enhance crop production and income at household levels. The rehabilitation of the rice schemes will enable farmers to diversify their crop and venture into other enterprises like vegetables and aquaculture rather than relying only on rice growing.

ACDP will provide support towards strengthening the capacities of the Phytosanitary and Quarantine Services within the Department of Crop Protection thereby guaranteeing the supply of quality inputs. The planned Preparation of Pest and Disease Regulatory Tools will support the development of regulations for pesticide registration and control, including for application equipment. Furthermore, there will be support to the registration of pesticides, dealers and premises that are handling pesticides which will go a long way to control marketing of adulterated inputs. The project will create awareness on pesticide aspects such as safe usage, handling and disposal of pesticides, including support to a pesticide poison information facility. The development of seed demand information system will serve to inform stakeholders about availability, quality and quantities of seed materials. Value addition and marketing in the project seeks to increase the quality of farmers' products on the production side, and to ensure more efficient linkages to market opportunities in a manner that increases the share of final price received by the farmers.

ACDP is expected to have significant positive impact on social and poverty conditions by increasing productivity and production of the selected commodities as well as focusing to reach and promote smallholding farmers. It will bring the needed support to Water Users' Groups so that they can better organize water management and maintenance of catchments to ensure irrigation sustainability. The process has been designed to ensure the inclusion of women and youth in the management of farms (and/or agribusiness) enterprises. Affirmative actions to include youth and women in activities will

include, but not limited to training, financial access, land access and use (on the irrigation schemes), and access to inputs.

Negative Impacts

The project will support a range of sub-components, some of which may require minor land acquisition which could potentially lead to involuntary resettlement and/or restrictions of access to resources or livelihoods. The project may involve very minimal acquisition of (compensation for) any small strips of land required for expansion of irrigation canals and infrastructure under Component 2.

Some of the associated negative environmental and social impacts include water abstraction on downstream users, loss of wetland habitat as a result of the irrigation infrastructure needed, point and non-point pollution of water sources, soil erosion and siltation, water and land-use related conflicts. Most of these impacts are minor or of low-intensity, site-specific and thus relatively straight forward to manage, with participation of the Local Governments and WUAs. Infrastructures like dams will not be considered as they could lead to flooding properties, settlement and affect biodiversity ecosystems.

The likely environmental and social impacts of roads rehabilitation are expected to be minor given the low mechanized road works that will be involved. Although project activities do not involve major civil works, historical and cultural properties may be encountered, either in the rehabilitation and/or extension of existing irrigation schemes and/or roads in the project areas. Component 1 and 3 involve irrigation and infrastructure rehabilitation activities (roads, irrigation related infrastructure, grain storage and processing facilities).

STAKEHOLDER ISSUES

Issue Raised	Remarks
Opio Sam Oceng – Cassava farmer- Apac District What criteria used in selecting areas of the project? Some areas which are main producers of the ACDP targeted crops are not included in the project!	Support from the proposed project would be concentrated on production and marketing of the selected commodities in twelve (12) geographic clusters. A commodity cluster is an area covering on average 3 districts, **with proven potential for one or two of the selected commodities**.
Mugume Peter – Farmer (Kabale District) **Mwesigye Elias John – Farmer (Kabale District)** Helping bring pesticides is a welcome undertaking but of recent in the villages, the pesticides are being increasingly abused i.e. committing suicide, killing of birds in rice fields and poisoning dogs. How can such abuses be controlled? How will fertilizers and pesticides be distributed in the project? Will they be free or they will be sold out?	The Pest Management Plan elaborates mitigations to address the challenges. Under the ACDP, 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 work with MAAIF and relevant NGOs to create awareness raising actions that will target the different pesticide users in order to avoid such accidents and incidents.
Mr. Stephen Mugabi **Assistant Commissioner** **Wetlands Management Department** There is need for the project to avail public toilets at the different irrigation schemes as many people are likely to join the rice schemes. There are currently no toilets at Dokho; where do the people go? Sanitation is very critical during the operation phase. Involvement of Wetlands Management Department should be clear right from the start. There is a tendency to bundle the Department under MoWE and under such arrangement, any one comes up that I am from the Ministry!	The rehabilitation should go beyond the irrigation structures and therefore MAAIF should incorporate sanitation issues into their subcomponent designs to cater for sanitation issues. The WMD is a key stakeholder since rice irrigation schemes are typically developed in wetlands.
Gift Grace- Agro-Chemical Shop Attendant of Mo-AgroLinK in Kiryandongo District There is no supervising authority and the sale of fake chemicals is not checked in any way. The town council issues trading license to the drug shop but is not bothered of what is sold.	The PMP recommends that MAAIF works with UNADA and UNBS to address the issue of fake and adulterated pesticides on the market.

Otim Ayita - Agricultural Officer – Lira District When will cotton be promoted and why is it left out in most of Government interventions? People have limited choices that partly explains why wetlands are being degraded	Five focus commodities (maize, beans, rice, cassava and coffee) have been selected according to the priorities articulated in the operationalization framework for the non-ATAAS components of the DSIP. The demand for the selected crops (maize, rice, beans, cassava and coffee) in national and regional markets is high.
Mr. Ssenyonjo Nicholas – Executive Director of Uganda Environment Education Foundation (UEEF) We have been engaged in educating farmers on safe agricultural practices especially regarding use of pesticides. Therefore, MAAIF should engage NGOs like us to implement the project because we are already on the ground.	NGOs have been recognized as very important stakeholders in implementation of the ACDP especially in areas of creating awareness on safe pesticide use. They will be facilitated accordingly.
Dr. Friday Agaba – Commissioner – Principal Medical Officer, Ministry of Health Pesticide abuse has become a serious problem in this country. If the project envisages the use of pesticides, then it should work with the MoH to put in place proper safeguards to ensure that cases of pesticide abuse do not increase.	MAAIF will continue to liaise with MoH under the ACDP to ensure that the health impacts of the ACDP through pesticide use are minimized. In addition, MoH will as well provide statistics related to pesticide misuse such as poisonings etc.
Mr. Julius Oboth – Imports Officer at Uganda Revenue Authority. Over the years, we have engaged in inspection to ensure that banned and fake pesticides are not imported into the country. We shall continue working with MAAIF Inspectors to address this issue.	It is very critical for MAAIF Inspectors to be present at the different entry points to help URA identify fake pesticides. In addition, MAAIF should train URA Staff accordingly as the pesticide formulations and trade names continue to change over time.
Mr. Stephen Okia – Analyst at Government Analytical Laboratory – Wandegeya GAL has the capacity to analyze pesticides to determine quality as well as for environmental monitoring purposes.	GAL will play an important role in testing of pesticides as part of its mandate.
Atwine Esther-District Agriculture Officer - Ntungamo Production of crops in commercial quantities especially for sale and regional market is	**Activity 3.3: National level agribusiness and marketing support.** The aim is to link up the ACE with regional and international markets through agribusiness

possible but the country lacks agencies to deal in the sale of food crops unlike coffee which is spearheaded by UCDA how is rice, beans and cassava traded?	agreements and networking with exporters. The project will work at national level with value chain stakeholders and their organizations.
Ongol Joseph **Wetlands Management Department** Get ways of equitable sharing of household incomes from sale of crops. When crops are produced, all proceeds are taken by men and women are left out and all money used by men to marry other women. Of recent, rice has become a cash crop though it also serves as a food crop however, the laws on wetlands don't allow people to reclaim wetlands yet MAAIF in this project is promoting rice cultivation. Has MAAIF come up with mechanisms of working with Wetlands Management Department on sustainable cultivation in wetlands?	ACDP project concept and proposal development provides a clear analysis on key issues affecting several categories of beneficiaries of ACDP such as gender and youth and related regional imbalance in respect to agriculture. In addition, sex disaggregation of activities, approaches and monitoring takes in account gender challenges and specific impacts in increasing agricultural productivity of the selected commodities. The Consultant recommends that MAAIF together with the Wetlands Management Department embarks on an exercise to formulate Community Wetland Management Plans and update those others where they exist for a smooth implementation of the irrigation component of ACDP.
Kasimbazi James- District NAADs Coordinator- Kabale District The rainy seasons are increasingly becoming shorter due to unpredictability of the weather therefore, is government putting aside money for research into fast maturing crops to cope with rampant short rains?	It is necessary for MAAIF through research by NARO to deploy in the production system with the diversity needed not only to adapt to the new climatic conditions but also to the new pathogens that might arise as a result of shifting climates.

Mr. Edmund Kananura **Uganda Coffee Development Authority**	
Funding – Extension services are currently very inadequate. UCDA recommends that Government supports and funds coffee extension services to fulfill the objectives of the national coffee policy. Since coffee is vital to the national economy, it is important for coffee as a sector to have particular of separate extension services. Every Sub County should have a coffee extension officer. UCDA currently has only 28 Coffee Extension Officers!	Extension services are very critical to empower the smallholder farmers with knowledge on crop production to ensure the goals of ACDP are achieved. Therefore, MAAIF should consider recruitment of more extension workers.
Coffee planting – There is need to plant more coffee in addition to rehabilitation of old plantations. Therefore, there is need for NAADS to work with UCDA to identify the priority areas for new coffee plantations or those that require rehabilitation	Working together as agencies with a common goal of improving agricultural production in Uganda is critical.
Ms Patricia Ejalu – Deputy Executive Director – Technical, UNBS The current number of staff is 240 short of the required number estimated at 463 staff. This staffing gap continues to limit the organization in executing its mandate. For example, out of 35 entry border points, only 17 are currently being manned by UNBS.	There is need for UNBS to work together with ACB within MAAIF to control the entry and the continued presence of fake pesticides on the market. In addition, UNBS needs to recruit more staff to match the existing inspection needs in general.
Mr. Tony Kiwanuka – ESIA Assistant at NEMA Rice mainly grows in wetlands; it is important to map out the sections of wetlands to be utilized.	Very important issue given the need to preserve sections of wetlands for ecological functions. With the support of the Local Government, the ACDP implementation needs to initiate efforts targeting the demarcation of wetland boundaries from community and individual land. Once the process of demarcating boundaries is on course, then buffers zones can be put in place as a measure to reinforce the 'respect' for those boundaries.
It is also important to involve the local leadership from the start of the project so as to understand the key concerns of the stakeholders.	Preliminary consultations held during this ESMF preparation. More interactions will ensue at the ESIA/RAP stages.
It is important to obtain the required permits from NEMA for activities to be carried out in the	It is a requirement to obtain a Wetland User Permit in addition to conduct of ESIAs before the rice schemes

wetlands.	commence.
Dr. Mark Erbaugh – IPM CRSP in Uganda	
Constraints to IPM Adoption – The farmers have been ignored for a longtime and don't know what to do.	There is need for MAAIF or Government to show interest in what they (farmers) do. The farmers need to be trained to build their confidence. There is need to demonstrate to them and to make them participate. This can be done through village schools that can be run by extension staff to teach the farmers.
Extension workers need training in areas of pest and disease identification, IPM and alternatives to pesticide use as well as in-service training i.e. new areas of science to help them do their job. In addition, there is need to redefine the role of extension workers.	Critical issue. The Pest Management Plan elaborates the training requirements for the extension staff and farmers at different levels.
Pesticides Misuse – There is need to sensitize the masses. An interesting example is the practice of spraying harvested tomatoes with fungicides to preserve tomatoes sold in markets.	There is need for more monitoring and surveillance as well as testing of food on the markets for pesticide residues and contamination.

PROJECT AND ESMF IMPLEMENTATION

Institution	Responsibility and Safeguards Capacity for ESMF Implementation
MAAIF	**Responsibility** • MAAIF will be the main implementing unit of this project at national level, working in liaison with local governments in the respective districts. • Overall Project Coordination Unit (PCU) for ACDP project • Oversight role and the implementation of mitigation measures and general compliance of the project with any permits, licenses and Approval Conditions and related regulations and standards on environment. • Report on matters of resolving complaints and grievances regarding the ACDP activities by stakeholders **Capacity** - The Ministry does not have Environmental and Social management specialists. Given the fact that agricultural activities contribute cumulatively to environmental degradation in Uganda, there should be residential in-house capacity in MAAIF for environmental management. The ministry has no designated social scientist dealing with social safeguard issues, which has a negative impact on effective implementation, monitoring and reporting on the social issues including land acquisition. It is therefore recommended that MAAIF creates in-house positions of Environmental and Social Development Specialists to handle safeguard issues, beef up the gender focal person to enable efficient management of the activities.
NEMA	**Responsibility** – review and approve environmental impact assessments as well as monitoring project implementation in accordance with the National Environment Act and the respective regulations. NEMA also issues Wetland Use Permits. **Capacity** – In general, NEMA is understaffed and constrained mainly due to the limited operational funds and monitoring agricultural activities of smallholder farmers will be a challenge. However, NEMA can monitor the irrigation sub components of the ACDP through its Department of Environment Monitoring and Compliance in addition to the District Environment Officers.
WMD	**Responsibilities:** • Demarcation of wetlands • Undertaking monitoring and inspection of wetlands **Capacity** - The Department of Wetlands Management is still understaffed and under-resourced with respect to the scale of its tasks. However, the Districts also have a mandate to protect and monitor wetland use in their jurisdictions.
NAADS	**Responsibilities** – National Agricultural Advisory Services (NAADS) will, as per its mandate, will be responsible for advisory services to farmers. **Capacity** – NAADS has a limited number of extension workers.

ACB	**Agricultural Chemicals Board under the ACDP will include:** • Registration of new pesticides required under the project. • Licensing on new pesticides suppliers • Development of the project specific IPM Pesticides List • Work with MAAIF inspectors to enforce the pertinent laws **Capacity -** ACB 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.
MoH	**Responsibility** – 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.
UNBS	UNBS will work hand in hand with ACB, NDA, URA, NEMA and MAAIF to address issues of pesticides quality.
URA	**Responsibility** – URA will have to ensure that the fertilizers and pesticides imported to Uganda for the ACDP meet standards as per guidance of the ACB, NDA and UNBS.
GAL	The Government Chemist in the Ministry of Internal Affairs (MIA) will play a role in inspection to verify via analysis the content of products sold to the public and to control adulteration. In addition, GAL and other laboratories will be useful in testing of samples to monitor pesticide contamination and food safety issues.
UCDA	UCDA will work together with MAAIF and NARO to ensure that extension services specifically for coffee are adequate and also to promote research as well as distribution of resistant varieties.
MoWE	**Responsibility** – MoWE is the main water supplier, initiates policies and/or sets and enforces national standards and priorities for land and water management. It is mandated to promote the development of water for agricultural production, ensure compliance to land and environment rules and regulations. **Capacity** – MoWE does have in-house capacity in terms of qualified staff to implement this ESMF.
LGs	**Responsibility** – Work with MAAIF to implement the project within their respective jurisdictions. The Local Governments have District Environment Officers, District Agricultural Officers, District Community Development Officers and District Gender Officers, some of whom are involved in the current Bank Financed ATAAS and NUSAF-2 Projects. Sub-county extension staff shall also be involved in the implementation of safeguard policies. **Capacity** – Every district has a designated District Environment Officer whose responsibility is to monitor all environmental affairs of the district including compliance of activities with their jurisdiction. However, the districts will require facilitation to monitor project

	implementation as provided for in the ESMF budget. The capacity development of the respective District and Sub County staff needs to be strengthened through a hands-on training on safeguard requirements.
NGOs	• Raise awareness among the smallholder farmers about the dangers of pesticide use; • Work with extension staff to teach farmers about safe pesticide use and storage; • 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; • Empower the smallholders through training and other support to engage with the local government to address their concerns on pesticides use; • Do more to publicize to the public the environmental and health impacts of pesticide use
Contractors	**Responsibility** – Actual implementation of the project on ground including installations, etc. The Contractor on his part will also be responsible for planning, implementing and reporting on mitigation measures during the execution of the project works. **Capacity** – The Contractors are unknown at this point. However, the selection criteria will include past environmental performance as well as adequacy of contractor's staff to effectively implement mitigations.
World Bank	The World Bank will be responsible for review and clearance of ESIAs/Project Briefs as well as independently monitoring the project's environmental and social performance in relation to the respective safeguards through implementation support supervision missions. World Bank will also be responsible for reviewing regular monitoring reports and officially disclosing the ESIAs on its website. Technical guidance may also be provided by World Bank to MAAIF as needed from time to time.

Disclosure

This ESMF will be disclosed in compliance with relevant Ugandan regulations and the World Bank Operational Policies. It will be disclosed at the Info shop of the World Bank and will also be available to any interested persons in-country. During project implementation, MAAIF will also provide copies of the respective ESIAs and RAPs or disclosure at the World Bank Info shop for public access, comments and feedback.

ESMF Budget

Item	**Cost in USD**				
	Year 1	Year 2	Year 3	Year 4	Year 5
Mobilization and training in ESMF Safeguards requirement and general project management including GRM issues coordination (targeted include implementing agencies and LGs)	120,000	80,000	40,000	40,000	40,000
Facilitation to NGOs and CBOs to create awareness about safe pesticide handling and use	100,000	60,000	60,000	40,000	40,000
Projects supervision (civil works, health and safety, HIV issues etc.)	120,000	80,000	40,000	40,000	40,000
Preparation of Community Based Wetland Management Plans	150,000				
Demarcation of wetlands	200,000				
Facilitation of LGs to mobilize farmers and to create awareness	120,000	80,000	40,000	40,000	40,000
Facilitation of Water User Associations	80,000	60,000	40,000	20,000	20,000
Independent Third party monitoring	50,000	50,000	50,000	50,000	50,000
Annual Total	**940,000**	**410,000**	**270,000**	**230,000**	**230,000**
Total Budget Estimate for ESMF Implementation					**2,080,000**

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The ACDP will have several positive social impacts for people. ACDP is expected to have significant positive impact on social and poverty conditions by increasing productivity and production of the selected commodities as well as focusing to reach and promote smallholding farmers. It will bring needed support to Water Users' Groups so that they can better organize water management and maintenance of catchments to ensure irrigation sustainability. The process has been designed to ensure the inclusion of women and youth in the management of farms (and/or agribusiness) enterprises. Affirmative actions to include youth and women in activities will include,

but not limited to training, financial access, land access and use (on the irrigation schemes), and access to inputs.

The ACDP Project has been assigned Environmental Category B. Some of the associated negative environmental and social impacts include water abstraction on downstream users, loss of wetland habitat as a result of the irrigation infrastructure needed, point and non-point pollution of water sources, soil erosion and siltation, water and land-use related conflicts. Most of these impacts are minor or of low-intensity, site-specific and thus relatively straight forward to manage, with participation of the Local Governments and WUAs. Infrastructures like dams will not be considered as they could lead to flooding properties, settlement and affect biodiversity ecosystems.

Recommendations

Need for an Environmental Liaison Unit in MAAIF – MAAIF does not have a unit dedicated to overseeing environmental issues in the sector yet the nature of its activities interact directly with the environment. As a long term measure, MAAIF should establish an Environmental Liaison Unit (ELU) to mainstream environmental and social measures into the Ministry's plans, activities, policies and programmes. The continued reliance on Consultants is unsustainable in the long run.

Reserves Areas for Ecological Functions – Wetland areas have a rich biological diversity and are also important breeding grounds for some species of fish and birds. Of specific importance is the crested crane which is a national emblem of Uganda that breeds exclusively in wetlands, which are now threatened with rampant reclamation and conversion. Studies predict that if the current trend of wetland loss continues, it is feared that no Crested Cranes will breed successfully in the country within the next half a century. It is important, therefore, that wetlands be given due conservation attention to support the survival of its national emblem. Therefore, there is need for careful planning on the use of wetlands for ACDP activities. This is to be achieved through working with amongst others, the Department for Wetlands Management and NEMA.

Develop, update and implement CWMP – It is much easier to implement a project of ACDP's nature of design in an area that has a Community based Wetland Management Plan for political and stakeholder considerations. The Consultant therefore recommends that the project embarks on an exercise to formulate management plans and update those others where they exist for a smooth implementation.

Demarcate wetland boundaries and create buffer zones – The survey discovered that wetland boundaries have never been marked out in most of the areas visited and there was confusion on where community land ends or where the wetland starts. With the support of the Local Government, MAAIF needs to initiate efforts targeting the demarcation of wetland boundaries from community and individual land. Once the process of demarcating boundaries is on course, then buffers zones can be put in place as a measure to reinforce the 'respect' for those boundaries.

Integration of Climate Change Adaptation Measures – Available information indicates that, Uganda's climate variability has already pronounced impacts on agriculture in general and on ACDP

target crops in particular. It is recommended that, ACDP provides in its framework, Adaptation measures to counter climatic variability in its plans and activities.

Integration of sustainability measures into ACDP Planning – Need to integrate measures to ensure sustainability after the closure of interventions in ACDP is highly recommended. During consultations, it emerged that, in many instances, once financing of rice schemes come to an end (case for Olweny Rice Scheme in Lira District), Government seems not to have a clear and sustainable plans for the takeover of such infrastructures and at the end of it, communities simply vandalize the scheme and eventually abuse the wetland. In view of this, it is proposed that, the ESIAs on rice schemes in wetlands under the project should spell out clear project exit strategies as well as, propose comprehensive Decommissioning plans for the schemes.

1 INTRODUCTION

1.1 Agriculture Cluster Development Project

1.1.1 Project Development Objective (PDO)

The objective of the proposed project is to raise productivity, production, and commercialization of selected agricultural commodities in specified clusters of districts across the country. This will raise farm and agribusiness incomes while substantially lowering transactions costs in markets for agricultural commodities. Special attention will be given to raising productivity and marketed production on small-scale farming operations in the project clusters. Special attention will also be given to proactively ensure inclusion within project activities of farming households (and agribusiness firms) in which women and youth play a prominent role in the management of the farm (and/or agribusiness) enterprise. Five focus commodities (maize, beans, rice, cassava and coffee) have been selected according to the priorities articulated in the operationalization framework for the non-ATAAS components of the Development Strategy and Investment Plan.

1.1.2 Target Areas

The ACDP will be specifically implemented in the Districts of Masaka, Mpigi, Rakai, Iganga, Bugiri, Namutumba, Pallisa, Tororo, Butaleja, Kapchorwa, Bukwo, Mbale, Soroti, Serere, Amuru (including Nwoya), Gulu, Apac (including Kole), Oyam, Lira (including Dokolo), Kabarole, Kamwenge, Kasese, Kyenjojo (including Kyegwegwa), Mubende, Kibaale, Hoima, Masindi, Kiryandongo, Ntungamo, Kabale, Bushenyi, Isingiro, Nebbi, Arua (including Nyadri), and Yumbe.

1.1.3 Project Beneficiaries

Core beneficiaries of the project will be farmer and other value chain actors at local, district and national level, in particular national cooperative alliances, unions and federations, Area-based Cooperative Enterprises (ACEs), as well as their primary members such as Rural Producer Organizations (RPOs), cooperatives and producer associations. Private agribusiness firms will also benefit through greater volume and lower transactions cost. The involvement of some wholesale buyers, input dealers, rural banks, service providers and commercial farmers will be crucial to organize linkages to ensure effective access to productive assets, capital, services, know-how and markets. These categories would have relatively large but mainly indirect benefits. The project will work with approximately 300 ACEs, which represent about 3,000 RPOs, or about 450,000 farming households, of which 180,000 are producers of maize (of which at least 50% also producers of beans), 40,000 producers of irrigated and lowland rice, 110,000 producers of Robusta and Arabica coffee, and 25,000 producers of cassava. Through the irrigation component, the project will further benefit about 16,000 rice farmers (one acre per farmer on average) which will improve their food security, nutrition (vegetable production) and income. The project will support about 30 Water Users' Associations in better organizing water management and maintenance of their facilities.

1.1.4 PDO Level Results Indicators

Progress towards the PDO will be measured by selected performance indicators. The key PDO-level indicators are the following: (a) yields of selected commodities (maize, rice, beans,

cassava, and coffee) in the project areas; (b) increase in annual production of maize, rice, beans, cassava, and coffee (in MT) in the project areas; (c) proportion of annual production of selected crops (maize, rice, beans, cassava and coffee) exported; (d) seasonal variability (%) of targeted food commodity prices in local markets; and (e) proportion of direct project beneficiaries who are female and youth.

1.1.5 Project Components

The activities and investments to be supported under the proposed project are organized into four components. Component 1 would support activities related to expanding access to and use of key agricultural inputs. Component 2 would support the rehabilitation and expansion of existing small irrigation schemes for rice, assist formation of water user groups and look at water management and conservation. Component 3 would support activities and investments to improve post-harvest handling of the selected commodities and to improve the efficiency of output markets for these commodities and would also support measures to eliminate bottlenecks and trouble spots in rural access roads and market places. Component 4 would support capacity building and operations of the key institutional actors (particularly MAAIF, District governments, farmer organizations, and cluster committees). Component 4 would also support activities to develop, improve, and implement policies and regulatory frameworks for the production and marketing of the 5 selected commodities.

Component 1: Agricultural Inputs (US$ 65 million)

The objective of this component is to increase farmers' use of improved seeds, fertilizer, and integrated production and pest & disease management (IPPM) as well as coffee rejuvenation for sustainable growth of productivity, production and returns to the selected commodities in targeted districts. The overall approach is to simultaneously strengthen farmers' demand and market supply systems for intensified use of technologies and quality inputs, scaling-up research results (linked to EAAPP) and extension services (linked to ATAAS), towards the intensification of market-oriented smallholder farming systems. Support under this component will be organized in four main activities:

Activity 1.1: Availability of improved seeds and planting materials. Under this activity, the proposed project would support national seed sector development (for maize, rice and beans) and it will also support production of planting materials (for cassava and coffee). The project will work with other development partners to support the development of Uganda's seed industry and thereby accelerate the availability and adoption of improved varieties. Proposed activities will include: (i) consolidating seed demand information systems through technical studies and stakeholder consultations; (ii) bulking of farmers' demand for seeds and planting material; (iii) enhancing the production capacity and quality of the private seed industry; (iv) enhancing the multiplication capacity for quality open pollinated varieties (OPV) and planting material by farmer organizations; and (v) strengthening the agro-dealers distribution network and their seed quality control systems. This will involve working with the Uganda Seed Trade Association (USTA), national breeding institutions (Research Stations and Universities), seed companies and agricultural extension.

Activity 1.2: Access to and use of quality inputs (seeds and fertilizers). Under this activity, the proposed project would support and increase in farmers' use of appropriate inputs by implementing a time-limited input subsidy to kick-start sustainable productivity growth and production at farm level. This will increase volume in Uganda's agricultural input market and also increase volume in Uganda's agricultural output market. Intensification of input use will be put on sustainable footing by accompanying activities for adapted fertilizer recommendations and bulking input demand and imports.

Time-limited smart e-voucher scheme – To trigger the necessary increase in supply, as well as to generate demand for inputs (seeds and fertilizers), a time limited, and diminishing e-voucher scheme for inputs will be implemented for selected members of RPO and ACEs. The proposed package will be sufficient to plant one (1) acre of the target crop and cover 50% and 25% of input costs for two (2) consecutive seasons/years respectively. The access to this matching grant is triggered when the farmer provides the top-up to purchase selected inputs, either from an ACE, or from an accredited input supplier. About 450,000 farmers will benefit from this arrangement: it will allow them to jump start significant input use and increase productivity and production, create demand and profitably opportunity for input suppliers and de-risk farmers' financial commitment and create positive cash flow for access to inputs at commercial prices in succeeding seasons.

To put the voucher scheme on sustainable footing, the project will promote integrated organic and inorganic soil fertility management strategies, including by: (i) up-scaling fertility management demonstrations and availing mini-starter packs for adapted inputs; (ii) supporting the consolidation of specific crop/location fertilizer recommendations in collaboration with ATAAS; (iii) promoting bulking of demand and imports of adapted fertilizer and agro-chemical supply through public-private partnerships; and (iv) strengthening agro-dealer networks and ACEs.

Activity 1.3: Integrated pest & disease control/management. In complement to on-going research and extension activities, ACDP will further strengthen: (i) the development of integrated pest and disease management guidelines for targeted commodities, including tolerant varieties, good agricultural practices and reasonable use of pesticides; (ii) pest & disease identification tools and services based on modern Information and Communication Technologies (ICT) networks, involving district Subject Matter Specialists (SMS) and ZARDIs (plant clinic services); and (iii) technical training of extension workers and agro-dealers on pest & disease symptoms and adapted treatment recommendations.

Activity 1.4: Stakeholder training. An important an often forgotten input is knowledge. Having improved seeds and fertilizer will not necessarily result in higher productivity if the farmers do not know how to utilize these enhanced inputs effectively. This part of the project is closely linked to NAADS and NARO through the World Bank supported ATAAS project and coordinated with the upcoming World Bank supported Skilling Uganda project. The project aims through training of trainers (ToT) to equip outstanding farmers, farmer group leaders and agro-dealers with the up-to-date knowledge on agronomy, processing and market information on the selected commodities. This information is then relayed to farmers through training and enhanced

service delivery. The ToT training will be provided by private and/or public institutions based upon a competitive bidding process.

Component 2: Agriculture Water Management (US$ 36million)

The immediate objective of this component is: (i) to develop irrigation infrastructure in lowland rice paddy settings, (ii) promote sustainable water management practices and infrastructure operation and maintenance through support for to farmer groups/cooperatives/user associations and (iii) conserve land and water resource functions within the vicinity of the irrigation schemes and upstream erosion 'hotspots'. This component will build on the current experience gained in rice agronomy and the recent MAAIF irrigation rehabilitation in Doho, Mbuku and Agoro financed by the AfDB. Component 2 will provide a platform for the concentration of inputs under Component 1 and the production of higher quality rice for Component 3

Activity 2.1: Irrigation and drainage infrastructure development (including internal and access roads to selected schemes). The project will apply water control to 6,000 ha of existing lowland rice to raise rice cropping intensities to 200%. It is anticipated that this will develop 3,000 ha of small scale schemes and3,000 ha of medium scale schemes (of which 900 ha rehabilitation in Bwirya and Lwoba) in 10 targeted districts. The project will initially focus on those schemes where design studies are advanced and development costs fall within defined IRRs. The investment will triple the current 2,225 hectares of irrigation serviced by public in Uganda: the investment will include the road network and other amenities required. The works will include linking schemes to the road network, mainly treating critical points, provision of culverts and small bridges and limited lateritic lining

Activity 2.2: Water use management and infrastructure maintenance including formation of water user groups. The project will support the formation and consolidation of water user groups prior to infrastructure investment. Capacity strengthening will include training in: (i) water management and maintenance; (ii) environmental sustainability and catchment management; (iii) management and administration of the user groups; and (iv) preparation of service contract documents. District staff will be trained (how) in providing active support to the groups and water users and a detailed O&M manuals will be prepared.

Activity 2.3: Integrated soil and water conservation/ management (including watershed protection) for irrigation areas and associated buffer zones. In order to conserve the functionality of wetlands and surrounding buffer zones impacted by irrigation development, a set of soil and water conservation methods will be applied within developed areas to maintain ecosystem functions, flood regulation, sediment control and drainage across the irrigated areas. This initiative will contribute directly to climate mitigation measures and be linked to capacity building efforts to strengthen farmers' knowledge and access to Sustainable Land and Water Management (SLWM) related research and extension services. Watershed management aspects will benefit from the World Bank assisted Watershed Management and Development Project (WMDP-P123204) and the SLM elements of the ATAAS. In areas that are not covered by WMDP, watershed management needs will be identified during conduct of ESIAs and technical feasibility studies, and incorporated into the project design for implementation to enhance the

sustainability of the lowlands gravity irrigation schemes through sound management practices in the watersheds.

Component 3: Post-harvest handling, storage, value addition and market linkages (US$ 34 million).

The objective of this component is to ensure the necessary market linkages for inputs and outputs of targeted value chains to increase the value, quality and quantity of agricultural products sold in local and regional markets.

Activity 3.1: Farm- and community-level post-harvest handling and storage. The aim is to improve farm level product quality and revenues through improved handling, grading, bulking and storage. The project will provide the required training and investment support. The project will support the rehabilitation or construction of 150 local feeder storage (up to about 500 tons) and link them up with ACE stores and markets. These smaller feeder warehouses would be co-funded or rehabilitated/upgraded through rehabilitation of buildings and furnished with basic equipment to ensure quality. Market-oriented cooperative enterprise promotion grants will be provided to first and second level cooperative groups to upgrade equipment in targeted value chains, in particular for processing of cassava. In addition, demonstration processing units will be supported to act both as a business incubation unit as well as a training center for farmers' associations and entrepreneurs in enterprise development. Capacity building of relevant public and private stakeholders at national and district level on technical and management aspects will be provided.

Activity 3.2: ACE-level warehousing, value addition and marketing. The aim is to: (i) promote and strengthen the momentum of farmer institutional development, i.e. building of farmers' organizations from primary level to ACE level, and other key stakeholders of the project; (ii) strengthen apex producer organizations to deliver services to their members, including market information, access to market linkages, management training, audits; (iii) provide investment support for a network of cooperative warehouses important to the maize and rice value chain process at ACE level warehouses (see above); (iv) provide an integrated range of services covering all aspects of warehouse management, including technical aspects and risk management; and (vi) improve access to short and medium term financing for input provision and operating warehouses.

Activity 3.3: National level agribusiness and marketing support. The aim is to link up the ACE with regional and international markets through agribusiness agreements and networking with exporters. The project will work at national level with value chain stakeholders and their organizations. The project will: (i) support the development of agribusiness agreements and market linkages; (ii) improve ACEs, value chain actors and farmers' access to rural financial services by facilitating links to sound financial institutions; (iii) support national apex organizations to develop a platform for exchange of market information and negotiation of contracts between ACEs and regional wholesale traders and agro-industries ; and (iv) enhance the capacity of national stakeholder organizations and public services that are relevant for the project.

Activity 3.4: Access roads and market infrastructure at community level. ACDP will provide investment within each cluster for market access improvements, mainly in the form of access roads, to contribute to the competitiveness of targeted commodities. Market access improvement can also constitute of upgrading of key markets.

Component 4: Project Management, Coordination and regulatory Reforms: US$ 15 million)

The aim of this component is to: (i) ensure project management and coordination; and (ii) improve on the existing policies and other regulations of direct relevance to this project and to ensure stakeholder coordination at national and cluster level.

Activity 4.1: Project management and coordination. The overall responsible authority for ACDP will be the Minister of MAAIF on behalf of the GoU. MAAIF will be oversight by a National Steering Committee with representation from relevant ministries at PS level, and with broader stakeholder representation through the Private Sector Foundation. The planning and coordination of ACDP will take place at national and cluster levels, with multi-stakeholder (public, producers and private sector) representation at each of these levels, while implementation will be done at national and district levels. At national level a national coordination team (NCT) will be established within MAAIF. A national multi-stakeholder platform (NMSP) will be created to function as an advisory forum for NCT.

A cluster approach will be used to implement the project. A cluster is a coherent area comprising on average 3 districts, with similar proven potential for one or two selected commodities. Each of the 12 clusters will establish Cluster multi-stakeholder platforms (CMSP) to ensure programming and priority setting for activities is done at cluster level and from a commodity value chain perspective.

At district level each involved district within a given cluster will form a district coordination team (DCT) to oversee and facilitate project implementation. The DCT will work closely with producer organizations and private sector representative to set priorities for the district and make local interventions as targeted and effective as possible.

Activity 4.2: Strengthening input & output regulatory functions and standards. The core public regulatory functions as well as capacity of public and private stakeholders will be strengthened to enable a favorable environment for project implementation. This includes, but is not limited to: (i) seed and planting material policy and regulations as well as quality assurance and certification at national and district levels,; (ii) fertilizer policy and regulations; (iii) strengthening the pesticide regulatory framework and the application of pest and disease control management; (iv) capacity development for processing, registration, quality assurance, handling and safe use of agro-chemicals; and (v) strategy and regulations for sustainable and safe labor-saving technologies.

1.1.6 Project Financing

The overall public sector cost of the project is estimated at US$150 million. As indicated in the Table below, the entire US$150 would be funded from IDA Investment Project Financing.

Component	IDA budget (USD million)	%
Component 1: Agricultural Inputs (seeds, planting materials & fertilizers and pesticides)	65	43
Component 2: Agricultural water management	36	24
Component 3: Post-harvest handling, storage, value addition and market linkages	34	23
Component 4: Project Management and Regulations	15	10
TOTAL	**150**	**100**

1.2 Purpose of ESMF

This ESMF provides guidance on how environmental and social aspects shall be identified, assessed and managed. Specific project locations have not been clearly identified at this stage, hence it provides a general impact identification framework to assist project implementers to screen the projects and institute measures to address adverse environmental and social impacts.

1.3 Objectives

The objectives of the ESMF are:

a. Establish clear procedures and methodologies for environmental and social planning, review, approval and implementation of ACDP sub-projects under the ESMF;
b. Prescribe project arrangements for the preparation and implementation of sub-projects in order to adequately address World Bank safeguard issues;
c. Assess the potential generic environmental and social impacts of envisaged investments in the projects;
d. Propose generic mitigation measures which will effectively address 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.

1.4 Approach and Study Methodology in ESMF Preparation

1.4.1 Document Review

Review of the existing baseline information and literature material was undertaken to gain an in-depth understanding of the proposed project. A desk review of the Ugandan legal framework and policies was also conducted in order to internalize the pertinent national legislation and policy framework that should be considered during project implementation. Among the key documents that were reviewed in order to collect baseline information included:

a. Agricultural Sector Development Strategy and Investment Plan 2010/11-2014/15;
b. Draft ACDP Project Appraisal Document 2014;
c. Cassava Development Policy, 2007;
d. Draft Uganda Organic Agriculture Policy, 2009
e. Land Use Policy, 2006
f. Pest Management Plans for Ghana Commercial Agricultural Project 2011;
g. Economic Policy Research Centre/EPRC 2010 Public Expenditure Tracking on Road Infrastructure in Uganda;
h. FAO/NARO Country Report on the State of Plant Genetic Resources For Food and Agriculture, 2013, Entebbe;
i. ESMF for Regional Pastoral Livelihoods Resilience Project, MAAIF 2013;
j. ESMF for Agricultural Technology and Advisory Services (ATAAS) Project, MAAIF-2009;
k. ESMF for EAAPP MAAIF, 2009;
l. ESMF for Water Management and Development Project (WMDP), MoWE, 2012
m. District Environment Reports;
n. Ministry of Water and Environment/Directorate of Water Resources Management, Hydro climatic report 2000;
o. National Development Plan 2010/11– 2014/15;
p. National Irrigation Development Plan 2010-2035;
q. Rice Development Strategy 2003;
r. Plan for Modernization of Agriculture, 2000
s. Rice Development Strategy, MAAIF- 2003; and
t. Sector Annual Review Reports for MAAIF 2010-13 periods;
u. UBOS, 2010 Uganda Census of Agriculture 2008/2009;
v. Uganda Vision 2040; and
w. Uganda Bureau of Statistics Statistical Abstract 2011.

Literature and documentation also included cataloguing and analysing customary rights and practice on water resource use and management were identified and reviewed. These were sourced at the sub-county, local district administration, area operational NGOs, line ministry and client field staff and headquarters.

1.4.2 Reconnaissance Field Visit

A sample of the proposed cluster districts and existing irrigation infrastructure and rice schemes were visited and surveyed through deliberate inspection of their respective characteristic features i.e. the environmental and social setup. This was done with a view of assessing the values that are likely to be affected. The survey findings informed the assignment in terms of categorization and possible subprojects anticipated as well as pertinent environmental and social impacts in the various phases of the subprojects which is important in terms of the development of screening procedures and checklists. This action allowed for the different potential impacts of the facilities to be identified.

1.4.3 Stakeholder Consultations

Consistent with best practice in developing ESMFs, consultations were held during field visits with the key stakeholders and institutions including: MAAIF, NAADS, NARO, MUK, UNBS, URA, NEMA, Uganda Coffee Development Authority, Local Government Officials especially the DAO, Line Ministries and Lead Agencies including MWE, and NAADS Agricultural Extension Workers. This was to ensure that the ESMF addressed existing challenges as captured

on the ground. Dialogue and interviews were also held with a sample of smallholder farmers in the different cluster districts to capture the existing pest and pesticides management methods and well as to collect data on the magnitude of pest problems in the country.

2 CONSTRAINTS TO SMALLHOLDER AGRICULTURE AND SPECIFIC INTERVENTIONS UNDER THE ACDP

2.1 Crop Pests and Disease Attacks

Uganda is among the major producers of coffee, banana, cassava, tea, tobacco, maize, rice, groundnuts, and other important crops suitable for food security. These food and cash crops are constantly threatened by epidemic pests and diseases. Both foreign and indigenous pests and diseases are a threat to agriculture. In the recent past, the country has been fighting outbreaks of a number of crop pests and diseases. Coffee, an important income-generating crop to the small-scale farmers, was attacked by the Coffee Wilt Disease (CWD in 1990s, destroying more than 10 million Robusta coffee trees countrywide, in a period of less than 20 years, making the country lose billions of shillings. When all looked promising for the coffee industry, due to discovery of the resistant varieties to CWD, the Coffee Twig Borer (CTB, Lepidoptera) and the Coffee Leaf Rust Disease (Fungus) broke out into the plantations. All farmers are now battling with the pests.

However, lessons can be drawn from the Banana Wilt Disease (BBW). In 2001, an outbreak of banana bacterial wilt (BBW) broke out in Uganda leaving in its wake a trail of crop destruction and utter misery among affected farms. As a result, a 50% decline in household incomes from banana sales and a corresponding increase in banana prices were observed during 2001 and 2004 in Uganda. There is no doubt that BBW is the most devastating disease to hit banana production in the Greater Lakes region (AATF, 2009). It changed crop production patterns, income sources and means of livelihoods. In Mukono and Kayunga districts, for example it was reported that banana production for certain varieties declined by between 80% and 100%, with the most affected being gonja, kayinja and ndiizi (AATF, 2009).

The World Bank financed project ATAAS initiated a Rapid Response Initiative on BBW with the main goal to decrease the rate of incidence from 42% down to 5% within a year and stop the spread of devastating infection that is killing banana plantations and threatening food security. BBW is a joint initiative, now financed through ATAAS operation in the amount of $5 million per year, is led by MAAIF, NAADS) and NARO and supported by local governments who committed to a common goal of bringing this disease under control.

2.1.1 Vulnerability to Pests and Diseases

Uganda is vulnerable to pest and disease attack especially since the country is crossed by the equator where the environmental conditions favour availability of crops in most parts of the region. Dr. Mark Erbaugh and Prof. Samuel Kyamanywa also observe that Uganda is very highly vulnerable to pests and diseases as virtually every crop requires some form of pest management for its cultivation. They add that one of the reasons is the country's location in the tropics which has a lot of food for pests in addition to the weather that favours the pests and diseases. They cite the Coffee Wilt Diseases which was a big problem recently. However, as it is being managed, the Twig Borer has broken out. For cassava, the problem has been the cassava mosaic disease. Now the new challenge is the Brown Streak diseases. Therefore pests and diseases problems are endless.

Climate change, trade liberalization, and agricultural intensification (introduction of irrigation farming, increased fertilizer use, introduction of new crops and varieties, changes in land use etc.) could trigger the occurrence of new pest problems. Future outbreaks of existing (or new) pests and diseases are a certainty, and although all outbreaks will result in losses, the key risk is that badly and ineffectively managed responses to new outbreaks will significantly raise the scale and impact of the losses (FAO, 2011).

2.1.2 Factors contributing to Vulnerability

Human movements and Cross border trade

Human beings are mobile most of the time and since some of the border entry points are porous, obnoxious weeds and pests are likely to enter the country. This is compounded by wars and famine and natural disasters such as droughts, landslides, and heavy rains, which sometimes makes some parts of the country to rely on food aid. Transport of food aid and cross border trade is a sure way for entry of alien but noxious pests like the larger grain borer – Prostephanus truncatus which has become an endemic pest in the entire East African region.

Indiscriminate exchange of planting materials and stocking materials by farmers across borders without following proper plant/livestock quarantine regimes is considered a big threat to ensuring crop and livestock health within Uganda. Cassava mealy bug entered Uganda in 1992 via the Democratic Republic of Congo. Likewise the Cassava green mite – Mononychellus tanajoa is rumoured to have escaped from a scientific laboratory in Uganda but later became a devastating pest of cassava. It is projected that pests and diseases may become a bigger problem as more trade and aid flourish in the region.

Inadequate Resources

Surveillance of Emerging Infectious Diseases (EIDs) is crucial for developing countries' agricultural self-sufficiency and wider social economy, but these technologies are often expensive and require technical preparation, economic investment and personnel. Given the cost, many developing countries do not have adequate control systems; nor can they acquire and update lists of emerging pathogens within their borders (Vurro, 2010). The consequence is that many diseases in developing countries simply spread without being recognized and monitored (Vurro, 2010). The limited resources of the Ugandan coffee sector affecting research and extension (e.g., 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 (World Bank, 2011).

Role of Climate Change

Climate risk is understood as the probability of negative impacts on farmers, the environment and crop production resulting from the interaction of climate hazards and conditions of vulnerability (UNDP, 2013).Currently, the main impacts of climate hazards on crop production include increased susceptibility to pest and diseases and occurrence of new diseases (UNDP, 2013). It is evident that pests and diseases will also change and mutate under climate change. Like plants, they will be subject to natural selection and mutation to adapt to the new conditions.

Climate change promises to have major – if uncertain – effects on the interactions between crops and pests. The changing climate is likely to affect different pests in different ways. This may result, for instance, in changes to pest growth rates and the number of generations they achieve per year; pest mortality due to low temperatures (or lack of it); or host susceptibility (SP-IPM, 2008). The effects of these changes are likely to include the expansion of some pests' ranges and higher pest pressures within their existing ranges, together with the development of new pest problems where, for instance, secondary pests become primary pests, or new alien invasive species become widespread. Climate change is likely to have profound impacts on pest–crop and pest–beneficial interactions and may substantially increase the pressure on farmers to use pesticides in response (SP-IPM, 2008). Climate change will result in a higher probability of entry, establishment and spread of pests of plants and invasive alien aquatic species for the following reasons:

- For some animal and plant pests and diseases and invasive alien aquatic species, the climate will become more conducive and for others the meteorological conditions will become less favourable. This will result in unstable situations with a high probability of entry and establishment in areas that are presently protected by unsuitable conditions;

- Meteorological and related environmental circumstances may change the geographical distribution of host species, putting them in contact with animal and plant pests and diseases of related hosts to which they do not possess resistance;

- New animal and plant pests and diseases may emerge due to evolving selection and adaptation to new situations.

2.1.3 Risk Levels of Particular Crops

Disease epidemics are strongly linked to climatic conditions and therefore some diseases may disappear or lose their predominance in a given production system and new pathogens or new strains may become more important. Climate variables control the geographical distribution of pests and diseases, and therefore expand their distributions to new areas. Temperature rise in cold mountain areas enables vector and pests to increase their ecological range to areas where they would otherwise be limited by low temperatures (GoU, 2007). Pest and disease pressure is likely to continue in many regions of Africa, moving into some new regions, as well as reducing pressure in other regions (Jarvis et al. 2012). This causes more infestation during the following production season, as the new hosts will not have had immunity. Altered wind patterns also change the spread of wind-borne pests, vectors and pathogens for crops (GoU, 2007). Plant pests and diseases could potentially deprive humanity of up to 82% of the attainable yield in the case of cotton and over 50% for other major crops and, combined with postharvest spoilage and deterioration in quality, these losses become critical, especially for resource-poor regions (Chakraborty and Newton, 2011).The introduction of diseases and pests will result in higher costs to national food industry in relation to inspection, treatment and compliance with obligations of the importing trading partners (FAO, 2008).

Cassava

Of the few studies which have quantified the impacts or responses of cassava to climate change, all have found cassava to be the least affected crop when compared with other major staples such as maize, sorghum and millets. Jarvis et al. (2012) examined the impacts of climate change on cassava production in Africa, and questions whether cassava can play an important role in climate change adaptation. They examined the impacts that climate change will likely have on cassava itself, and on other important staple food crops for Africa including maize, millets, sorghum, banana, and beans based on projections to 2030.Their study was based only on environmental niche based approaches, which use the present distribution of the pest or disease to train a statistical model that describes the climate conditions likely to harbor the pest or disease. According to Jarvis et al. (2012), Whitefly is the most widely distributed pest under current conditions but its distribution is predicted to shrink in 2030. For cassava brown streak disease, the suitable climate conditions for the pathogen across the continent are predicted to decrease by 2030, but new areas will be affected with **notable increases in Uganda of 3.4%.**

Cassava mosaic disease represents one of the primary constraints to cassava production in Africa. The only alternative for its control is with host plant resistance, appropriate crop management, and through management of the vector (Bemisia tabaci). Two particularly aggressive strains can produce mixed infestations in the crop, making its management highly complex. With climate change, and the predicted shift in geographic distributions this could bring into contact multiple strains which previously have not been in contact, causing more virulent strains and contributing to greater losses (Jarvis et al. 2012).

Coffee

Stakeholders, including the Coffee Research Centre (COREC), argue that changes in weather patterns (drought, unpredictable and varied rains, temperature changes) are causing alterations in the appearance and severity of newer pests (e.g., black twig borer), while existing diseases are migrating to ecological zones where they previously did not exist (World Bank, 2011). Consultations with UCDA indicate that the biggest threats in the Country are the Coffee Wilt Disease and the Twig Borer. UCDA also notes that the Twig Borers used to be in low lands but due to climate change, they are everywhere and now attack either types of coffee as mentioned by the World Bank (2011). Currently, CWD is no longer seen as a major threat, as it is now viewed as controlled, and regular replanting with clonal varieties has rejuvenated the tree park and maintained production volumes. However, there remains the risk that the disease will begin to spread again because CWD-tolerant varieties are not yet available for large-scale release (World Bank, 2011). The UCDA revealed during consultations that commercial distribution of the CWD-resistant and commercially viable variety to farmers is expected to commence in 2015.

The possibility of renewed outbreaks of CWD and the unchecked spread of other pests and diseases could potentially devastate the entire coffee sector, causing greater losses than those from CWD to date or even causing farmers to abandon coffee production and subsequent loss of Uganda's share of the global market (World Bank, 2011). An already high prevalence of disease and pest outbreaks, together with the historic failure of the sector to adequately manage such outbreaks in a timely manner, suggests that future losses from pests and disease are highly

probable and likely to generate high industry losses (World Bank). The coffee berry borer only appeared a few years ago and it is becoming worse (Oxfam, 2013).

Rice

Rice is also susceptible to considerable disease stress. Two major rice diseases (blast and bacterial leaf blight) are significantly aggravated by adverse weather conditions that affect temperature, air humidity, and soil moisture status, posing a threat to the crop (ARCC, 2013).

Maize and Beans

According to ARCC (2013), maize and beans can both be produced under a wide range of climatic conditions and are not likely to be significantly affected by predicted temperature changes. The greatest impact of climate change on these crops is due to continued high inter-annual variability and amount of precipitation. Maize is greatly affected by short-term water stress or hail, while beans in particular develop significant fungal and viral diseases in the event of excessive rainfall during critical periods. Declining soil fertility and structure greatly exacerbate the problem by reducing the capacity of soil to retain water, thus making nutrients less available to the plants.

Farmers typically sun dry their crops, often on the bare ground. Post-harvest storage losses are high due to pests and decomposition. The maize export market is particularly threatened by the presence of aflatoxin contamination, and the problem will likely be greatly exacerbated if the predicted increases in the traditional dry season precipitation materialize. The presence of precipitation during this period means that traditional sun drying of grains may result in degraded grains/seeds for storage and an increase in diseases/fungi such as aflatoxin, which thrive in moist conditions (ARCC, 2013).

2.1.4 Access to Inputs

National Surveys carried out between 2005/6 to 2010/11, show that use of improved agricultural inputs is generally limited among all households in Uganda except for a few commodities such as coffee, cotton, maize, beans and cassava. Other than these crops, both MHHs and WHHs utilize limited improved seeds, fertilizers, manures and pesticides in the other crops. It is believed that less than 5% of all households use any of the improved inputs for any given crop. Any attempts to make use of improved inputs are primarily by married male headed MHHs and married, divorced and widowed. The study by MoFED revealed that 97% of households were using local seeds, while 90% used neither manure; fertilizer nor pesticides. Use of improved seed was slightly better in the central than in other regions. Comparing use of improved seeds between maize and beans shows that the use is less among the beans farmers than for maize.

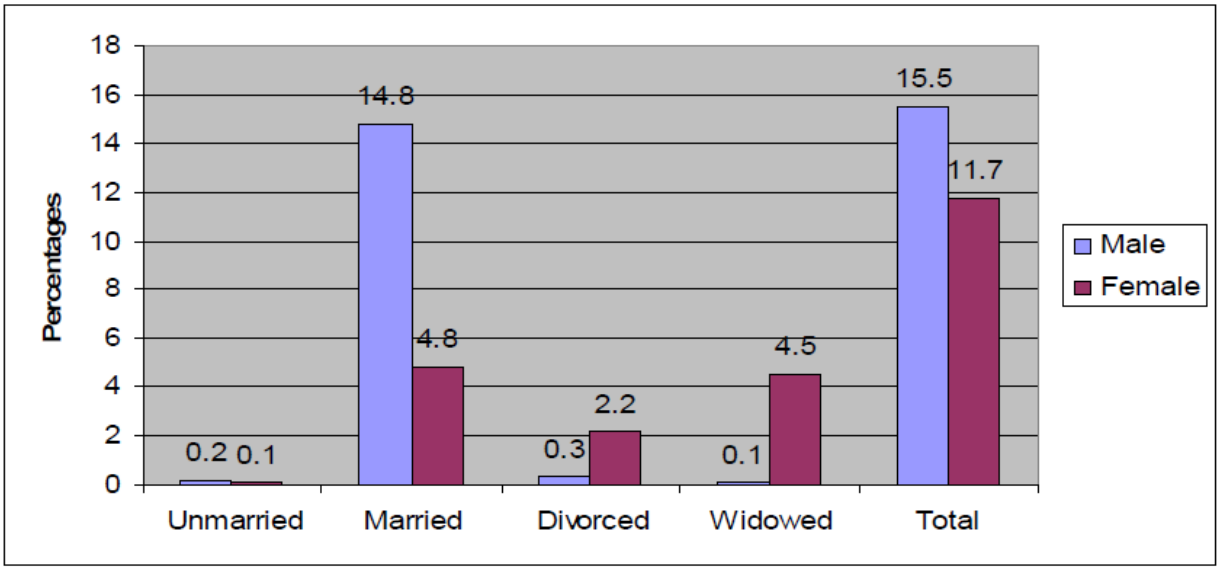

Figure 1: Proportion of households using improved maize seed by sex and marital status of household head (Source: UN Women and FOWODE, 2012)

2.2 ACDP Interventions to address Pests and Diseases and Access to Inputs

The objective of Component 1: Agricultural Inputs (US$ 65 million) is to increase farmers' use of improved seeds, fertilizer, and integrated production and pest & disease management (IPPM) as well as coffee rejuvenation for sustainable growth of productivity, production and returns to the selected commodities in targeted districts. The overall approach is to simultaneously strengthen farmers' demand and market supply systems for intensified use of technologies and quality inputs, scaling-up research results (linked to EAAPP) and extension services (linked to ATAAS), towards the intensification of market-oriented smallholder farming systems. Support under this component will be organized in four main activities:

2.3 Poor Road Infrastructure

2.3.1 Status of Roads

In Uganda, Community access roads comprise 43% and they form a link in the road network between farmer communities and other transport networks. Community access roads are characteristically narrow, pot holed; their edges have over-grown vegetation to the road verges (Figure 2), and in the rainy season become less impassable while in dry seasons, they are grossly dusty.

In 2005, a comprehensive review of Uganda's agriculture and rural sector was carried out by the Government of Uganda (GoU) in collaboration with the African Development Bank (AfDB). The review, which was undertaken under the auspices of Uganda's Plan for Modernization of Agriculture, identified a number of gaps (including gaps in investment), in infrastructure for access to markets, infrastructure for agro-processing, and the management of environmental and natural resources. The review revealed that transport constraints were hampering the sellers of agricultural produce and stymieing the development of an efficient marketing system. The lack of access roads in many rural communities made it extremely difficult for farmers to market their produce. This limits farmers' productivity, contributes to their apathy about technical

innovations, and burdened traders in rural areas with high transaction costs and at the end of it, farmers receive lower prices from their produce.

Poor roads increase transportation costs for all commodities, resulting in lower returns to producers and higher prices for consumers. For example, transport costs constitute up to one-third of the wholesale price in Kampala for cassava produced in and shipped from Kapchorwa District.

A cross ditch on a community access road (note dark arrow pointing to the ditch)

Narrow community access road with over-grown roadside vegetation

Motorable narrow community access road

Muddy and slippery Community access road. Driving on it during rainy season is cumbersome

Figure 2: Common countryside scenes of community access roads in Uganda

2.3.2 Proposed ACDP Interventions on Road Infrastructure

The project will support rehabilitation of 1,700 km of farm access roads in total. The project will not support opening up 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 reshaping (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.

Figure 3: Typical community access roads to be rehabilitated.

2.4 Challenges of Climate Change

Agricultural sector contribution to the national economy is being hampered by factors such as climate change effects such as drought, floods, irregular weather which needs to be addressed since Uganda still rely on rain fed agriculture. According to the 5 Years District Development Plan (FY 2010/11 to 2014/2015), Apac District experiences two rainfall seasons with peaks in April to May and August to October, and however with climatic change prevailing, the rainfall pattern has equally changed thereby affecting production seasons. This has led to high level of food insecurity and post-harvest losses.

According to the Ugandan Agricultural Census (UBOS and MAAIF, 2011), 7 % of the country's 3.95 million agricultural households reported they were prone to flooding, with most incidences reported in the Eastern Region. Furthermore, of the 2 million agricultural households that experienced food shortages, 1.8 million (91.5) experienced drought and 1.3 million (66%)

experienced pests or diseases (UBOS and MAAIF, 2011). Crop production has been negatively impacted by climate hazards and disasters; averages of 800,000 ha of crops are destroyed annually by climate-related effects, resulting in losses exceeding US$ 47 million (NEMA, 2008). During the 1997/1998 floods, coffee exports dropped 60 percent and tea estate operations were suspended in eastern parts of the country, while 300 ha of wheat were lost in the Kapchorwa District (MWE, 2002). Kapchorwa District experienced massive soil erosion as a result of the 2007/2008 floods (NEMA, 2008). In September 2010, further flood disasters hit the Teso Region leading to rotting cassava, sweet potato tubers and groundnuts worth over US$3.1 million.

2.4.1 Climate Variability and Rainfall Patterns

The U.S. Agency for International Development (USAID)/African and Latin American Resilience to Climate Change (ARCC) Project conducted the Uganda Climate Change Vulnerability Assessment in 2012. The study employed a mixed-method approach that included historical climate analysis and projections, a value chain analysis of eight key crops and a phenological review (i.e. how climate change affects the growth cycle of each of those crops), a livelihood survey of households and an assessment of water use for agriculture. The study showed how current climate patterns and how future climate patterns may influence key crop value chains and the livelihoods of households that depend on them. The study findings on agriculture were as follows:

On rainfall, the study established that:

- Current and past trends indicate that, the timing of rainfall can vary considerably, the onset of rainy seasons can shift by 15 to 30 days (earlier or later), while the length of the rainy season can change by 20 to 40 days from year to year;
- There is no significant change in average annual rainfall projected for the 2015-2045 period in Uganda; and
- There is likely to be a projected increase in rainfall in the months of December, January, and February, which is typically a dry season in all locations. This increase could have strong impacts on agriculture, especially with respect to tree crops (e.g. coffee) and post-harvest activities such as drying and storage, and
- There is a potential for an increase in the frequency of extreme events (e.g., heavy rainstorms, flooding, etc.)

With regard to temperature, the study notes that, average annual temperatures between 1951-1980 and 1981-2010, shows a notable increase of approximately 0.5-1.2 °C for minimum temperatures and 0.6-0.9 °C for maximum temperatures. Furthermore, this warming trend is projected to continue, with some models projecting an increase of more than 2°C by 2030. Temperature variability will likely have a strong impact on agriculture and livestock with a potential to increase the risk of disease and pest infestations.

Regarding crop value chain analysis and phenology on widely cultivated crops in Uganda and with specific reference to ACDP (coffee, beans, maize, cassava, and rice amongst others) are also vulnerable to the projected rising temperatures and increasing dry season and rainfall fluctuations. It is noted that, Arabica coffee is the most vulnerable, while cassava is the least vulnerable to climatic variability. Overall, coffee, rice, maize, beans and cassava in that order represent most to least vulnerable crops in that hierarchy.

2.4.2 Crop vulnerabilities to Climate Change

The vulnerabilities of the crops to climatic variability are as follows:

a. **Coffee**: Rising temperatures and erratic rainfall increase the risk of disease and pest infestations in coffee;
b. **Rice**: Two major rice diseases (blast and bacterial leaf blight) affect rice yields and are significantly aggravated by weather conditions such as higher temperatures, air humidity, or soil moisture;
c. **Maize**: Aflatoxin contamination represents a serious threat to the marketing of maize and will likely worsen if dry season rainfall increases;
d. **Beans:** Beans are vulnerable to fungal and viral diseases when excessive rain falls during critical growing periods;
e. **Multiple Grains**: Erratic rain could increase post-harvest storage losses of crops typically dried in the sun (e.g., maize, beans, coffee, rice, etc.), due to increased pests and rotting; and
f. **Sweet potatoes and cassava**: Both crops grow well at temperatures much higher than current ones, but are also vulnerable to pests and disease.

2.4.3 Vulnerability to climatic variability at Household Levels

In the study, households do not have significant buffers against additional stress. There is indication that, Households face important challenges indirectly related to climate, such as declining soil fertility and increasing land pressure. The systemic vulnerability of households in the study largely stems from the fact that they depend heavily on crops whose value chains are sensitive to climate variability and change and in which case; any change in food production critically increases overall vulnerability. For example, maize is an essential part of the diet of the most vulnerable households, and they sell a small portion of their harvest; yet this small amount of maize they sell represents a significant source of cash for the household. Less vulnerable households plant maize more often, sell a greater portion of their harvest, and have other more important sources of income. Similarly, the most vulnerable households in coffee-growing districts sell coffee less often, but they rely more heavily on it for income.

2.4.4 Adaptation Measures to Climate Change Variability at Household levels

The RCC study identified a wide range of measures that households employ to adapt to climate variability and change. They modify their management practices by shifting planting dates, preparing soil differently, or changing the mix of crops farmed on the same plot. Households also address risks by planting additional crops and crop varieties, and by investing in livestock or fruit trees. Additionally, households seek sources of income outside agriculture, both through short-term 'coping' strategies, such as hiring themselves out as manual labor or by producing charcoal; and through longer-term strategies, such as migration and investments in the education of their children.

Similarly, with regard to time horizons, although some adaptations and adaptation policies are short term and require more immediate action, other policies and practices will yield adaptive benefits over the long run. These geographic and time-scale considerations led to the development of specific recommendations such as) establishing the national context for adaptive agriculture; b) expanding research and learning across stakeholder groups; and c) strengthening and diversifying livelihoods.

2.4.5 Adaptive Capacity to Climate Variability

The levels of income diversity affects the ability of households to adapt to climate change implying that; households with greater adaptive capacity manage more diverse agricultural portfolios, they plant more crops and invest in livestock, and they also have a more varied mix of on and off-farm income sources. Access to land plays a strong role in on-farm diversification; as a result, land pressure in more densely populated districts such as Mbale and Kabale increases vulnerability. Proximity to urban centers also increases off-farm income and thus significantly reduces vulnerability to climate variability and change.

2.4.6 Need for Irrigation

For generations, Ugandan farmers have relied, and thrived, on rainfall to water the land, with irrigation mostly associated with large-scale schemes for crops like rice or sugar canes or flowers for export. But the climate is changing and droughts are becoming more frequent. Some regions in Uganda have been hit by food shortages after much of the area's harvests failed due to drought in the last years. According to Uganda Census of Agriculture Report 2008/2009 by UBOS, out of nearly 3 million agricultural households surveyed countrywide, an estimated 31,000 (0.9%) reported having presence of irrigation on their holdings which implies that, agriculture in the country is still predominantly rain fed (Figure 10) . On regional analysis by the same survey, eastern region had about 17,000 (53.5%) of agricultural households reporting presence of irrigation at their holdings followed by western region with an estimated 6,305 agricultural households (20.1%) and least being northern region with 2,776 agriculture households (8.9%).

Population growth in Uganda is high. As families have more children, farmland gets fragmented into small plots for the many siblings, productivity reduces and the dependence ratio grows. That, coupled with unpredictable weather, the result would be food insecurity, and automatically a poor country. For purposes of ensuring food security in Uganda therefore, irrigation is a better option to introduce to people for adoption.

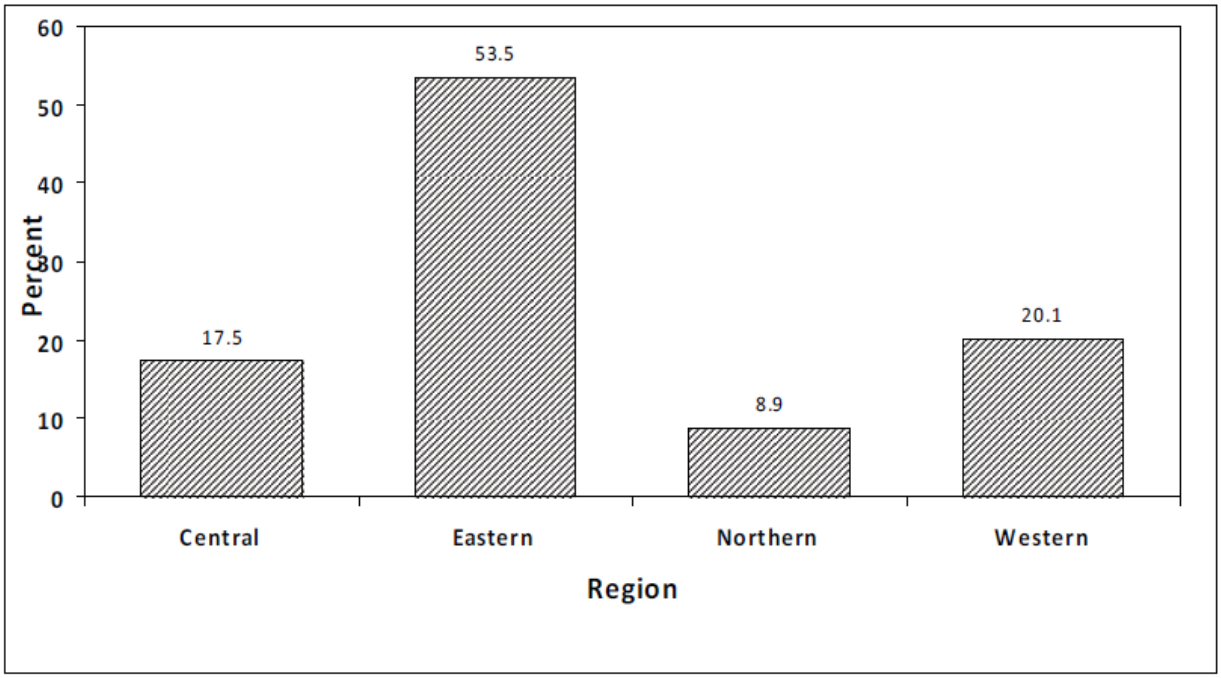

Figure 4: Percentage of Agricultural Households that Reported Presence of Irrigation on their Holdings by Region (Source: UBOS, 2010)

2.4.7 Status of Irrigation Infrastructure

Past efforts to develop irrigation in Uganda have concentrated mostly on large–scale irrigation schemes developed and managed by government with donor assistance.

Scheme	District	Area (ha)	Main Problems
Mubuku Irrigation Settlement Scheme	Kasese	516	Cultivation methods, flooding, water logging. The scheme, established in 1964, was damaged when River Sebwe burst its banks in 1994.
Doho Rice Scheme	Tororo	830 (potential for 1,000 ha inside formal scheme, 600 ha outside)	Siltation of canals, deterioration of head works, and flooding.
Olweny Swamp Rice Irrigation Scheme	Lira	Nucleus farm: 50 Itek and Okile: 450	Pumping costs, water control and availability.
Agoro	Kitgum	130	Only half operational.

Rice schemes especially Mubuku and Doho schemes should be priority for rehabilitation because of the role they played in the past in terms of providing gainful employment to the poor, giving rise to the production of high–value commodities for export (fruits/vegetables),import substitution (rice) and food security (Irish potatoes and rice).

Figure 5: Silted/clogged canal in Itek-Kile rice scheme in Lira

Figure 6: An irrigation canal made by local farmers at Doho Rice Scheme

Figure 7: Existing Main Canal to Lwoba Rice Fields

Figure 8: Main Canal from Lwoba to Bwirya

Figure 9: Smaller canals distributing water to rice fields at Lwoba

2.4.8 Proposed ACDP Interventions on Climate Change

The immediate objective of Component 2: Agriculture Water Management (US$ 36million) is: (i) to develop irrigation infrastructure in lowland rice paddy settings, (ii) promote sustainable water management practices and infrastructure operation and maintenance through support for to farmer groups/cooperatives/user associations and (iii) conserve land and water resource functions within the vicinity of the irrigation schemes and upstream erosion 'hotspots'. This component will build on the current experience gained in rice agronomy and the recent MAAIF irrigation rehabilitation in Doho, Mubuku and Agoro financed by the AfDB. Component 2 will provide a platform for the concentration of inputs under Component 1 and the production of higher quality rice for Component 3.

Figure 10: Existing infrastructure at Doho Irrigation Scheme to be further rehabilitated.

Figure 11: Main Canal to Bwirya and Lwoba Rice Farms: Water User Associations are vital since the streams are used as sources of domestic water apart from irrigation.

Figure 12: Bwirya Rice Farm: Such use of too much water is unsustainable and has to be regulated under the ACDP

2.5 Value Chain Losses

2.5.1 Definition

A value chain is composed of activities and services that bring a product from conception to end use in a particular industry. For example, the value chain for maize begins with inputs like seeds and fertilizer and moves to the production of grain. The farmer may sell the grain directly to consumers or institutions that will, in turn, process it into maize flour for consumption or for further value addition in creating other products. Alternatively, wholesale traders will purchase the grain and take it for sale in urban or regional consumer markets. This commodity production, marketing, and consumption chain is called a value chain because value is being added to the commodity at each step.

2.5.2 Need for Value Addition

Enhancing productivity in food crops is not enough to lift smallholder farmers out of poverty. Farmers must add value to their primary production and also diversify their range of income-earning activities, both on and off the farm. This is only possible if they handle post-harvest practices very well. Improved post-harvest handling, storage and processing of agricultural produce can lead to increase in income and improved livelihoods of smallholder farmers and agro processors.

Appropriate post-harvest handling, storage and use of new technologies can reduce losses, improve quality and food safety, and enhance smallholder farmers' food security and income.

2.5.3 Existing Situation

The infrastructure needed for value addition includes energy, transport, communications, and physical marketing facilities. Many Ugandan households lack altogether or are inadequately served by such facilities.

Figure 13: Harvested beans shelled from the garden. Note the garden was intercropped, maize on the ground

Figure 14: Drying beans on a tarpaulin in Kabale, few farmers can afford this

Figure 15: Racks for drying the sliced cassava in Lira

Figure 16: A rice drying slab and store in Lira

2.5.4 Status of Storage Facilities

Figure 17: A traditional crib (Maize Storage in Kiryandongo)

Figure 18: An Improved crib (Maize storage in Kiryandongo)

2.5.5 Status of Sorting and Grading

Figure 19: Winnowing, usually done by women

Figure 20: Unsorted beans from the garden

Figure 21: 3 varieties sorted from the same batch

2.5.6 Status of Marketing Facilities

Rural market facilities in Uganda are mostly comprised of open air or semi-permanent buildings, which, together with a lack of storage and processing facilities, lead to high post-harvest losses for many agricultural commodities.

Market development by rehabilitating or constructing rural market collection points where farmers can clean and dry their harvest, enhance quality and add value and by improving the transportation infrastructure linking farmers to market centers is very critical.

Few of Uganda's smallholder farmers belong to farmers' associations. Many farmers access markets through small or medium traders who aggregate commodities purchased directly from the farmers. Their capacity to add value by cleaning and drying it and access profitable markets is, however, limited. By developing the marketing infrastructure of farmers' organizations, and small and medium traders, MAAIF can enhance their ability to access more profitable markets.

Figure 22: Maize store operated by a middle man in Kiryandongo district

Figure 23: Note the amount of grain on the ground (Poor post-harvest handling)

2.5.7 Processing Facilities

Mitigating post-harvest losses in Uganda – estimated to be between 12 and 25% at the farm level – are a major challenge. Moreover, the majority of the country's smallholder farmers lack the capacity to engage in agro-processing activities, which results in most farm produce being sold with little or no added value.

According to the 5 Years District Development Plan (FY 2010/11 to 2014/2015), much of the agricultural produce in Apac District is sold in raw forms. This is because the concept of value addition is still not yet very well adapted by the farmers. This has led to getting little income from the produce. Market information is rudimentary in this district and the district has poor agricultural infrastructures including road and transport network, Poor post-harvest handling due to inadequate storage facilities, modern abattoirs, fish handing facilities.

Figure 24: A fabricated machine for slicing cassava right from the garden, the sliced cassava is dried on racks from here

Figure 25: A maize mill and store operated by AFRI-KAI, an international company in Kiryandongo

2.5.8 Status of Packaging and Branding

Figure 26: Graded Bugisu Arabica Coffee

Figure 27: Well branded coffee ready for final consumption

2.5.9 Farmers' and Traders' Cooperatives and Associations

Farmers are capable of producing surpluses but find it difficult to transport them to a market or a roadside stall. Most farmers produce small quantities for sale but find that the local trader is only prepared to pay low prices for their goods compared with the wholesale price. As individual farmers they have little bargaining power with traders and must often except almost any price offered.

However, large-scale farmers do not suffer from these problems. They can produce large quantities of each crop of a consistent quality standard. For this reason they have no difficulty in attracting buyers and will receive the true market price for their output.

Figure 28: Cooperatives like Bugisu Cooperative Union are instrumental in marketing of produce

Farmers' associations can be important in disseminating market information, providing extension services and credit, and providing economies of scales both for input supply and the marketing of produce, enhancing the bargaining power of farmers in commodity markets. However, such associations are nonexistent or inadequate in many areas of rural Uganda.

Not long ago most agricultural markets were controlled through state-operated marketing boards which fixed prices for surplus production. For that reason, there was no strong incentive for farmers to work together to sell their goods. Now that marketing activity is almost entirely in the hands of private traders, farmers are obliged to make complicated marketing decisions.

The only way small-scale farmers can compete with these large farms is to co-operate with each other to form an association or farmers marketing group. If, say, 50 farmers are able to offer for sale their combined output and take steps to make sure that it is of a standard quality, they will be able to market their goods as successfully as a large-scale farmer.

Some farmers in Uganda are already adopting these collective marketing strategies and receiving the benefit of higher prices for their output and indeed need the support of Government. The other farmers therefore need to be informed about the benefits of co-operation and how to go about setting up such systems. This certainly requires the farmers to acquire new skills and to develop closer relationships with their fellow farmers. Educating farmers to understand how markets work, how they can earn more money by collective action and how they can put these

ideas into practice requires the organization of many group meetings, training sessions and marketing studies.

2.5.10 Proposed ACDP Intervention

The objective of Component 3: Post-harvest handling, storage, value addition and market linkages (US$ 34 million) is to ensure the necessary market linkages for inputs and outputs of targeted value chains to increase the value, quality and quantity of agricultural products sold in local and regional markets.

2.6 Weak Regulatory Framework

2.6.1 Adulterated and Expired Pesticides

Challenges associated with direct procurement of pesticides by smallholder farmers in Uganda 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 an ACB registration. Similarly, there are cases of pesticides being re-packaged, and sold in smaller amounts without any, or at least proper, labels.

Figure 29: Inside the agrochemical shop in Kiryandongo, some chemicals are locally packed in used mineral water bottles (Red Arrow)

2.6.2 Proposed ACDP Intervention

The aim of Component 4: Project Management, Coordination and regulatory Reforms: US$ 15 million) is to: (i) ensure project management and coordination; and (ii) improve on the existing

policies and other regulations of direct relevance to this project and to ensure stakeholder coordination at national and cluster level.

2.7 Access to Land

2.7.1 General Issues

With Uganda's population density now estimated at 230 persons per square kilometer which is considered far above the threshold of 100 persons per square kilometer, density intensive methods of farming are increasingly becoming necessary in Uganda (IFFRI, 2008). Land availability and security of tenure present unique and potentially constraining circumstances to agriculture in Uganda; in a growing number of districts, land pressure is increasing rapidly.

Households with limited access to land are found to use more labor per unit area cropped, substituting more intensive and labor-demanding production for extensive, land-demanding production. Although Ugandan farmers generally do not use inputs such as fertilizers, pesticides, hybrid seeds, and modern land management practices, land-poor smallholder farming households have been found to use many of these inputs more intensively than farming households with larger landholdings. As a result of higher labor and input use, land-poor households obtain higher value of crop production per acre, although they have substantially lower incomes per capita than land-rich households. As such, access to land is one of the key factors affecting the intensity of land management, the use of higher-yielding agricultural technologies, the profitability of agricultural enterprises, and rural poverty.

Moreover, factors other than land tenure may play a bigger role in determining farmers' decisions to invest in their landholdings. These include agro-climatic conditions, population density, farm size, presence of perennial crops on the land, access to local markets, and distance of the plot from the homestead, especially for bulky products. Thus, while land tenure does impact the level of investment made in agriculture, it is may not necessarily be the most significant determinant in this regard.

2.7.2 Gender Issues in Land Tenure and Access to Farmland

Uganda's divergent land tenure system and overlapping land rights have impacted negatively on different gender and on long-term investments in the agriculture sector. Many landless potential farmers (especially the women) cannot easily access land because of the costs involved, cultural norms and the threats imposed by the existing overlapping land rights. Women provide from 70-80 per cent of agricultural labor and yet few have rights to own (7%) or control use of land.

According to the Land Policy, the gender structure of the land rights varies across the country but in general it is highly unequal. For example, women work on the land more than men but have unequal land rights. The women's rights tend to be limited to access, while men are more inclined to enjoy ownership rights. Available literature indicates that, only 30% of women have access to and control over proceeds from land but ownership and control over land is ultimately with men. In general terms, women's access to land is usually through their spouse or male members of their family. Loss of the spouse increases the chances of violation of their rights to land. However, in urban areas, some working women are able to purchase land and in cases

where poor women have taken on the role of family breadwinner such as when widowed, women have full control of land.

2.8 Gender Issues in the Agriculture Sector in Uganda

2.8.1 Gender Dimension in Crop Farming

The majority of households involved in agriculture in Uganda are engaged in crop farming; with almost equal representation of adult WHHs (98.4%), (UN Women and FOWODE, 2012) and MHHs (98.7%). Almost all the elderly headed households, irrespective of sex are engaged fully in crop farming as a livelihood means, possibly due to the fact that, they cannot offer their labour for other productive activities due to limited physical energy and age constraints. Most households do allocate land to growing cash crops such as coffee, cotton, maize, beans and cassava. In many cases, WHHS normally allocate less land to growing cash crops giving more land to food crop growing and the reverse is true for the MHHs (Figure 30).

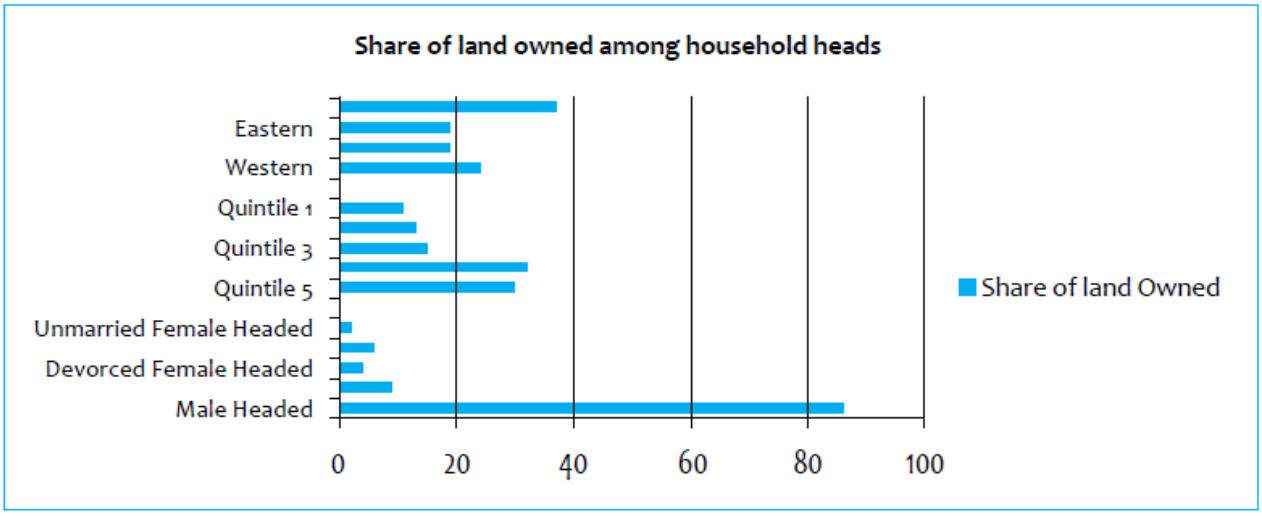

Figure 30: Share of land owned among household heads (Source: UN Women and FOWODE, 2012)

2.8.2 Gender and Access to Agricultural Credit

According to the Yearbook on Agricultural Finance 2009, there has been an apparent reduction in the level of agricultural finance from formal banks. Both men and women have faced the challenges of accessing affordable credit to help them invest in the agriculture sector. However, women farmers find it even more difficult since they do not have collateral and rarely get access to information regarding existence of programmes put up by Government to address the problem of agriculture finance. This has resulted in some of the worthwhile initiatives aimed at improving farm productivity through investment not realizing their goals. Men and women have resorted to use of SACCOs to get finance but these have been found to be expensive and exploitative which discourages farmers from applying for credit. In FY 2009/10, Government allocated Uhs. 30 billion to Bank of Uganda to be accessed by both male and female farmers. Accessibility to this credit facility has been a challenge because of lack of clear guidelines and conditions which favor only large scale farmers and not small farmers, the majority of whom are women.

2.8.3 Patriarchy in land ownership at household Level

One of the problems of agricultural production at household level is patriarchy. By definition, patriarchy is a system of male domination. In this case, the gender domination is in terms of land ownership and use. Like landlordism, patriarchy is a socially embedded institutional norm which runs counter to the realities of agricultural production. However, unlike landlordism, patriarchy is gender-based and typical stereotype that, women who produce food, do not own the land. The males who predominantly own the land de-emphasize food production in favor of 'cash crop' production. The result is limited attention to agricultural production for household and national food security.

The recent transformation of traditional food crops (such as bananas, maize, beans and rice) into marketable crops has had important gender dimensions. These products have become male crops (Golan and Lay, 2009). Male domination in the control of cash crops springs from the gendered link between 'cash' crops and access to power in the household political economy. Evidence suggests that the new cash crops claim a larger share of household land. They also claim a greater share of family labour and other household productive assets.

2.8.4 ACDP Intervention on Gender

The project concept and proposal development provides a clear analysis on key issues affecting several categories of beneficiaries of ACDP such as gender and youth and related regional imbalance in respect to agriculture. In addition, sex disaggregation of activities, approaches and monitoring takes into account gender challenges and specific impacts in increasing agricultural productivity of the selected commodities. The gender mainstreaming will explore incorporating affirmative actions in activities including (but not limited to) training, financial access, land access and use (on the irrigation schemes), access to inputs and all other component areas. MAAIF through this project will consider designing interventions that bring women on board for equitable empowerment and poverty reduction through increasing their participation and involvement in market oriented agriculture given their already vulnerable position in access and owning production assets. The Gender Focal Officer in MAAIF will be instrumental in supporting these assessments and mainstreaming.

3 PROJECT BASELINE DESCRIPTION

3.1 Size and Location

Uganda is a land locked country, located in East Africa, lying between latitude 40 12' N and 10 29' S and longitude 290 34' E and 350 E astride the equator. It is bordered by South Sudan to the North, the Democratic Republic of the Congo (DRC) to the west, Tanzania and Rwanda to the South and Kenya to the East. Its total land area is 236,000 km2 of which, 33,926 km2 is permanent water and 7,674 km2 is permanent swamp, its dry land accounts for 194,000 km2. Administratively, Uganda is divided into 112 districts and the capital city Kampala. The districts can loosely be classified into four broad regions namely; northern, central, eastern and western (Figure 31).

Figure 31: Regions of Uganda (Source: MoES, ESMF 2013)

3.2 Topography

Towards the South, the characteristic scenery consists of flat topped masa-like hills and broad valleys frequently containing swamps. Towards the North, the landscape consists of gently rolling open plains interrupted by occasional hills, mountains and inselbergs. Most of the country lies within altitude 900–1,500m above sea level. The lowest point in Uganda is at Nimule on the Sudan border in North Western part of the country, where the altitude is 600 m.a.s.l and the highest point is Mt Rwenzori whose highest pick is 5 100 m.a.s.l.

3.3 Climate

Over most of the country, mean annual maximum temperatures range between 18-350C; and mean annual minimum temperature range between 80-230C. Relative humidity is often high, ranging from 70% to 100%. Mean monthly evaporation rates range between 125-200mm. Most parts of the country have two rainy seasons, April-May and October-November with the exception of north eastern region which has one main season. The wettest part of the country is Lake Victoria shores, and the mountain uplands of the East and Western parts of the country where the mean annual rainfall varies between 1,200-1,500 mm. The driest part of the country is the NE part, inhabited by the semi-nomadic Karamajong tribe. Here, the mean annual rainfall varies between 625-1,000 mm. The rainfall in almost all parts of the country adequately supports agriculture and soil types range from fertile volcanic ash, sandy gravel acidic or shallow poor soils.

3.4 Geology and Soils

Geological formations of Uganda reveal very old rocks formed in the pre-Cambrian era around 300 or 600 million years ago. The younger rocks are either sediments or of volcanic origin, formed from about 135 million years ago (cretaceous period) to the present. Thus, a gap of about 460 million years remains in the knowledge of the geological history of Uganda. A number of parameters define the soils of Uganda and these include parent rock, and the age of soil and climate. The most dominant soil type in ferralistic soil, which accounts for about two-thirds of the soils found in the country. Based on studies carried out in the past (NEMA 1996), Uganda's soils are divided into six categories according to productivity: (a) very high to high productivity, (b) moderate productivity, (c) fair productivity, (e) low productivity (e) negligible productivity and (f) zero productivity. The high productivity soils cover only 8% of the area of Uganda (MoWE, 2001).

3.5 Biological Environment

3.5.1 Wetlands

Wetlands in Lira District covers about 419km2 of which 298 km2 is under permanent and 121km2 are seasonal wetlands. The wetlands in the district are categorized into three major systems namely Olweny Wetland System, Okole Wetlands System, and Moroto Wetland System. The Olweny wetland system drain into Lake Kwania in Dokolo District, the Moroto system drains into Aswa river system, while the Okole system drains into the Albert Nile.

In Apac, wetland resources include drainage basins, the main system that supply the basin, the associated major wetlands to the systems and the nature of rivers and other water sources to the wetlands. These wetlands are found to be occupying the low lying plain with wide valleys. The flow of wetland water tends to follow the gradient of relief that is to say it flows from a raised landscape to the low lying plain for instance Aromi wetland on Aswa that flows the height of 3459ft above sea level.

In Dokolo District, there are wetlands developed along the floor of many of the rivervalleys and close to Lake Kwania; these areas may be up to 3km across. Wetlands occupyapproximately 22% (236 km2) of Dokolo District.

3.5.2 Wetland Vegetation in ACDP Project Areas

In Apac District, it is common to find monoculture stands and mosaic depending on the wetland type (permanent or seasonal). Monoculture stands of Cyprus, papyrus, vossia cuspidate and Typha domigensis are common along Lake Kwania and Victoria Nile shores, but vossia species are common along Okole. In Doho, rice cultivation has not destroyed the wetland, but has changed the character and flora of most of the area from a natural ecosystem to a managed artificial environment. The remaining natural vegetation consists of reeds Phragmites, floating grass Vossia and various species of sedge (Cyperaceae), including papyrus Cyperus papyrus.

Figure 32:Typha domigensisin Lwoba

Figure 33:Cyperus papyrus at Bwirya Rice Scheme

3.5.3 Fauna

African jacana, Ibis Egrets, Creeds, Ducks, Crowned cranes, Hammer kops, storks and herons are the dominant birds in the wetland of Apac district. Majority of these birds however migrate from major wetlands during dry seasons, presence of few shoebills was reported along Okole, calling for further survey and confirmation during the detailed ESIAs to enable planning for their conservation.Sitatunga and red bucks was reported in the main system of Okole, Victoria Nile and Lake Kwania. Isolate part of Arocha still harbours very few of these animals while monitor lizards and Marsh mongoose were common in permanent wetland and part of seasonal wetlands.

Figure 34: Doho Irrigation Scheme where birds are common as part of its ecosystem.

Fishing as an activity is common in all wetland in Apac District and the rate is greatest when seasonal wetland dry up. The most common type of fish includes catfish, Lung fish Tilapia and Clarius are observed in major wetlands. Tilapia is common in both permanent and seasonal water because it migrates to seasonal water during flooding.

Nature Uganda conducted ornithological studies in 2010 by monitoring rice paddies and isolated water pools. According to Nature Uganda (2010), the flooded plots are especially liked by the waders, ducks and storks. The isolated water pools provide good feeding grounds for the nematode feeding birds.

The survey by Nature Uganda recorded 24 species of which 675 individuals were African O pen-billed Storks and 97 individuals were Little Egret. Others include the Pink-backed Pelican, Long-tailed Cormoran, Little Bittern, Grey Heron, Goliath Heron, Black-headed Heron, Common Squacco Heron, Cattle Egret, Green-backed Heron, Little Egret, Yellow-billed Egret, African Open-billed Stork, Yellow-billed Stork, Sacred Ibis, Fulvous Whistling Duck, Lesser Moorhen, Black Crake, African Jacana, Long-toed Plover, Spur-winged Plover, Common Sandpiper, and the Black-winged Stilt among others.

3.6 Existing Wetland Status and Uses in Proposed Cluster Areas

The assessment of baseline socio-economic conditions involved identification of frontline stakeholders, competing uses, wetland based economic activities, social interactions and overall

contribution of wetland systems to the local socioeconomic conditions of the households. Field consultations were focused on understanding the key livelihood needs communities obtain from the wetland systems, and the associated values they attach to them.

3.6.1 Livelihood from Wetlands

The findings of the field reconnaissance surveys indicate that the surrounding communities of Doho, Lwoba, and Bwirya wetlands are largely dependent on these wetlands as the main source of income and food security, although in varying degrees in the direct, indirect, option and existence values/benefits to the communities as explained below. These wetland areas are cultivated with food crops e.g. rice, beans, maize, sorghum, cassava and bananas, sweet potatoes, Irish potatoes, ground nuts, soya beans, vegetables and fruits, animals are also kept and they include cattle, goats and sheep. This baseline information explains the way the different community members interact with the wetlands and will consequently be used as a basis for MAAIF to determine the efforts that can be used to ensure the wise management of these ecosystems while ensuring achievements of the respective goals of the ACDP.

3.6.2 Pressure on Wetlands for Crop Production

According to the 5 Years District Development Plan (FY 2010/11 to 2014/2015), the wetlands in Lira District continue to be under threats due to increasing population and the need for more land for agriculture, settlement, small scale industries and urbanization amongst others. The continuous degradation of wetlands in the district continues to pose a threat to availability of safe water for domestic use and increased cost for road construction at wetland crossings. Degradation of seasonal wetlands continues to affect the seasonal breeding of crested cranes, whose number has continued to go down due to habitat loss. There is also fear that this localized action is also contributing to global climatic change. The District continues to strive to mobilize funds for the preparation of the District Wetlands Ordinance. The ordinance is meant to bridge the gap in the environment laws that are spread within the various sectoral laws and are quite difficult to enforce. Environmental awareness campaigns continue to be implemented at various levels and using various meant that includes radios; community outreaches, workshops, seminars amongst others. Ecosystems approach to management continues to be used to manage the wetlands and forest reserves including those on public lands.

In Soroti district, it emerged that rural communities and wetlands are virtually inseparable. The growing of rice, cassava, sweet potatoes, millet and simsim, ground nuts, cow peas and beans as well as cattle keeping is all wetland supported especially during the long dry seasons that affect the region. Due to effects of climate change, partly characterized by long drought periods, the food security history has been affected. The pressure of wetlands has mounted as people desperately look for moist and fertile lands for crop growing.

In Isingiro District, the degradation of wetlands had received district and community attention, and some restorative measures have been put in place. For instance the communities together with Isingiro Local Government have raised tree nurseries to restore the lost vegetation and also reduce pressure on wetlands by providing alternative sources of wood, poles and biomass sources that communities currently harvest from wetlands. It is also believed that once the seedlings are planted, it will create an opportunity for wetlands areas to recover, and also perform their functions once again.

Population pressure in Kabale district has led to drainage of papyrus swamps. For example the northern half of Kashambya swamp was reclaimed from papyrus and sweet potatoes, sorghum and maize crops are raised on the beds. The Kiruruma valley system which contains a 15 km long papyrus swamp was extensively drained to allow the development of dairy cows.

In Rakai district, the hilly terrain leaves little productive land for crop cultivation and cattle keeping, which in addition to fishing are the main economic activities of communities in the district, and in the sub-counties of Kyarurangila and Kakyeera in particular. During the dry seasons, Rakai is one of the districts in Uganda that are affected by famine and this drives farmers to wetlands for moisture. Interviews also indicated that their soils are getting exhausted and that wetlands remain the only alternative for cultivation.

Wetland degradation in Apac takes the form of cultivation, brick making, settlement and bush burning. Those activities however, are not yet too adverse on the ecology of wetland in Apac. Most wetlands in Apac are still relatively intact and effectively dispensing their ecological functions and services. The rapid population growth and urbanization however are anticipative threats to the wetland ecology.

Therefore, in an effort to ensure the wise-use of these wetland ecosystem goods and services and improved livelihood, the ACDP project must seek to bring on board all stakeholders, key to the project being local communities whose involvement or neglect has the power to lead the project to the achievement of its goals.

Figure 35: Part of River Manafwa used for domestic water in Lwoba

According to the 5 Years District Development Plan (FY 2010/11 to 2014/2015), up to 46% of the Okole Wetland has been encroached and degraded by communities for farming due to poor weather which makes crop farming in the upland area unproductive. The rising demand for land for urbanization and peri-urban agriculture also continues to threaten the wetland systems that ramify the areas around Lira municipality. The Olweny wetland system in Lira District which is about 10,000 hectares, has had 600 hectares of it area developed into the Itek and Okile rice Project, distributed in Amach sub-county 350 hectares and Barr sub-county 250 hectares.

Doho rice scheme was formerly a seasonal wetland on the River Manafwa flood -plain. Doho Rice Scheme is an area of intensive irrigated rice cultivation under farmer group management. It is adjacent to areas of natural wetland, mainly in the south. The swamps immediately to the north of the scheme have also been drained for rice -growing by out growers. The swamps to the north form part of the Lake Kyoga complex. All of the rice-fields have irrigation channels which supply water to the rice-paddies from River Manafwa.

Figure 36: Rice fields at Doho Irrigation Scheme

Figure 37: Rice fields at Bwirya

Figure 38: Grazing of livestock at Doho Rice Scheme

Figure 39: Papyrus typically used to make mats threatened by wetland utilization for agriculture at Doho

Figure 40: Boys fishing in the Irrigation Canals at Doho

3.7 Socio-Economic Environment

The ACDP will be specifically implemented in the Districts of Masaka, Mpigi, Rakai, Iganga, Bugiri, Namutumba, Pallisa, Tororo, Butaleja, Kapchorwa, Bukwo, Mbale, Soroti, Serere, Amuru (including Nwoya), Gulu, Apac (including Kole), Oyam, Lira (including Dokolo), Kabarole, Kamwenge, Kasese, Kyenjojo (including Kyegwegwa), Mubende, Kibaale, Hoima, Masindi, Kiryandongo, Ntungamo, Kabale, Bushenyi, Isingiro, Nebbi, Arua (including Nyadri), and Yumbe. Their socio-economic profiles are summarised below:

Soroti District - Like most other districts in Uganda, agriculture remains the main economic activity in the area with emphasis on food crops and cotton as the main cash crop. Finger millet, sorghum, ground-nuts, cassava, cowpeas, sweet potatoes, maize, soy beans, simsim (sesame) and sunflower form the main source of food for households, while fruits (such as passion fruits, oranges and mangoes) and vegetables such as tomatoes, onions and cabbages are also grown in the district whose population estimates stand at 445,800 people, with 228,000 female, 217,800 male.

Apac District - The District is bordered by Oyam District in the North,Kole in the North-East, Lira in the East, Masindi District in the West, Amolatar and Nakasongola Districts in the South. The District covers a total area of 2,847 square kilometres of which 9% is under open swamps and water while 15% is under forest with 2,970 square kilometres for human settlement and 2,524 square kilometres suitable for arable farming. Crops production is the major economic activity in Apac, employing about 80% of the population. Arable land is very fertile and makes up 57.88% of the total land area. According to the 5 Years District Development Plan (FY

2010/11 to 2014/2015), the basic type of farm management system is the family farm, with an average land holding of 2+ hectares. Labour for cultivation is provided by the family and traditional communal labour provided by the local population on rational basis. A wide variety of tropical, sub tropical and some temperate crops are produced in the area. The main types of crops produced are food crops (Millet, Maize, Sorghum, Cassava, Peas, Beans, and traditional vegetables). Cash crops include: - Cotton, tobacco, legumes and non-traditional cash crops such as simsim, rice, sunflower, and soya beans.

The farming system in Apac District is not yet developed. Farmers still practice poor methods of opening land by use of hand hoes; small plots are overused due to lack of land for commercial farming, there is declining soil fertility, soil erosion and drought are common. Farmers use local planting and breeding materials, partly due to illiteracy, poverty, tradition and culture. The proportion of families using ox-ploughs is 50%, cultivation unit is usually the household members though communal groups of neighboring households are also common. Use of tractors for cultivation is almost non-existent.

Iganga District – It borders Mayuge district to the south, Bugiri to the southeast, Kaliro and Namutumba to the North and Jinja District to the West. It covers a total area of 1680 square kilometers, much of which is land and swamps. Iganga is basically a rural district (91% of the district population) with over 80 % of the people engaging in peasant agriculture, animal husbandry, fishing and produce buying. The main crop grown for cash is maize though in some parts the striga weed has affected its production. Other crops include coffee, potatoes,rice, beans and cassava. Coffee and sugar canes are the main traditional cash crops. Majority of the people live below the poverty line i.e. on less that $1 a day and can only produce for home consumption.

Isingiro District - Formerly part of Mbarara district, Isingiro borders the districts of Rakai in the East, Kiruhura and Mbarara in the North, Ntungamo in the West and the United Republic of Tanzania in the South. With a total population of 350,100 people(180,700 female, 169,400 males), the district covers an area of 2657.18 Sq. Km. In terms of climate, relief and vegetation, the district has a hilly terrain with vegetation characterized by a combination of bush and short grass which is suitable for animal rearing. The area receives rainfall of about 957mm annually, which support crop and animal production. In addition, the district has a high potential in terms of mining and lumbering.

Rakai District – With an area of 4,908.5 Sq. Km. Rakai borders the districts of Lyantonde and Masaka in the North and North-East, Mbarara in the West, Lake Victoria in the East and the United Republic of Tanzania in the south. The district lies in a modified equatorial climatic zone with high temperatures and heavy rainfall almost all year round. Based on population projections, there are 433,561 people in Rakai district. Agriculture is the main economic activities with a bias towards food crops such as beans, sorghum, millet, maize, cassava, sweet potatoes, Irish potatoes, ground-nuts, bananas; cash crops such as coffee; fruits and vegetables such as passion fruits, tomatoes, onions, pineapples and cabbage in addition to cattle keeping.

Kasese District – The district is divided into two counties, Bukonzo and Busongora, and is made up of 28 lower local governments. These include one municipal council split into three divisions, 3 town councils and 22 sub counties. The population of Kasese District is concentrated in a

narrow corridor of land running between the Rwenzori Mountains and the Western Rift Valley. Considerable pressure is placed on the available land to sustain the current growing population, and also on restricted land to be opened up for future use.

Trade is the main engagement in the urban centers of Kasese, further bolstered by cross border commerce with the Democratic Republic of Congo especially in the border LLG of Mpondwe hubiriha. A relatively new economic driver, on a positive growth trend, is the cultivation of maize, passion fruit, mangoes and pineapples, the latter two crops on a commercial scale.

Kabale District – Kabale district is predominantly occupied by the Bakiga. However there are a few other ethnic groups also found in the district. These are mainly the Banyarwanda and Bafumbira. The district is one of the most densely populated in Uganda only exceeded by the Kisoro District.

Agriculture and agricultural related activities are the main occupation of the district. It is estimated that over 90% of the population is engaged in agriculture. The available land for agriculture is estimated to be 1695 sq.km, while the area under agriculture is estimated to be 1186 sq.km. The average farm size is 0.5 hectare. The bulk of the crops grown are the traditional food crops that include: sorghum, Irish potatoes, sweet potatoes, wheat, beans, vegetables, maize, peas, finger millet, and coffee among others.

Dokolo District – Dokolo District is located approximately 180 km to the north of Kampala with the District administrative headquarters located in Dokolo Town. It is bordered by Lira and Alebtong Districts to the north, Apac and Amolatar to the west and Kaberamaido District to the South-East. The District has an area of 1,072 km2. In 2002 the District had a population of 129,385 which is projected to rise to an estimated 171,000 by 2010 (UBOS projection from the 2002 census).The District comprises a single County (Dokolo) and five Sub-Counties, Agwatta, Batta, Dokolo,Kangai and Kwera.

Lira District – According to the 5 Years District Development Plan (FY 2010/11 to 2014/2015), the economy of the district is mainly based on agriculture, with 81% of the population engaged in subsistence farming. Other sector in economy includes agro processing industries (3.1%), commercial activities and banking (15.9%). At independence cotton was the major cash crop but its production has declined and has lost glory. Crops hitherto were mainly food crops such as millet, simsim, cassava, Groundnut, beans, pigeon peas, cowpeas, sorghum, sweet potatoes and other recently introduced crops such as rice, sunflower, soya beans, maize and horticultural crops serve both as food and cash crops.

Crop production plays a very important role in the agricultural development in particular and more general in the development of Lira District. Crop agriculture provides food, cash income, employment and raw materials for rural and urban industrialization. It has greatly contributed to the economic growth and development witnessed in Lira in the recent past. Crop production is by smallholder peasant farmers who relay on rain fed agriculture. Apart from OSRIP farms in Itek – Okile, (Barr/Amach sub counties respectively) there are no large screens and untargeted farms in

the district. There are many potential areas along wetlands and dams where small scale irrigation can be developed.

Both men and women participate in crop production, but the role of women is much greater than that of men, especially in weeding, processing and storage. Unfortunately very often women hardly take part in the decision-making process at the household level which is an area which is almost entirely controlled by men. Through gender mainstreaming it is, however, possible to increase production and productivity and guide farmers better to make profit, reduces crop losses in the field and post-harvest.

NAADS was launched in greater Lira in FY 2002/2003 in five sub counties. Greater Lira then comprised of Lira, Amolatar, Dokolo, Alebtong and Otuke districts. In the last four years, NAADS has expanded to cover all the 24 sub counties in the entire greater Lira. In the first 2 years 7 sub counties were brought on board. In 2005/2006- Amolatar was granted a district status and Lira lost 4 sub counties (Aputi, Awelo, Muntu, and Namasale), in 2006/2007, Dokolo county was curved out from Lira and Lira remained with 15 sub counties (Abako, Adwari, Adekokwok, Aloi, Amach, Amugu, Apala, Aromo, Barr, Lira, Ogur, Okwang, Olilim, Omoro, and Orum). 2008/2009 and 2009/2010 otuke (Orum, Okwang, Olilim and adware sub counties) and Alebtong (Apala, Abako, Amugu, Aloi and Omoro sub counties) were curved out of lira district.

Currently, NAADS has covered all the sub counties in Lira district. The sub counties are: - Agweng, Adekokwok, Amach, Aromo, Barr, Lira, Ogur and Omoro are 9-year old sub counties; Adekokwok 7-year old, while the sub counties of Barr, Lira are 5 years old. New sub counties that were brought on board in the FY 2008/2009 were Adyel., Ojwina, Railways and Central Divisions. The sub counties of Agali and Ngetta are newly created 2009/10and will be operat

Orientation and Stakeholders education: - NAADS has educated the stakeholders (district councilors, farmers, private sector and technical staff) on the NAADS programme objectives, principles and programme implementation. Most stakeholders are aware of the NAADS programme. The programme educated stakeholders in the new sub counties.

NAADS institutional structures are in place, that is, the farmer groups, farmer fora, lower local governments as well as the district local government. The capacity of the institutions (PCCs, CBFs, and FGs) to handle the programme and the level of awareness have greatly improved. 892 farmer groups have registered and have been empowered to manage NAADS. The interim farmer fora, executive farmer fora and procurement committee are in place.

3.8 Division of Labour

3.8.1 General Trends

Predominantly male tasks in agriculture include the felling of trees, ploughing with oxen or tractors, digging holes, the purchase and use of chemicals, looking for markets and the sale of produce. Women usually undertake sowing, harvesting, head loading of produce, crop-drying, winnowing, seed selection, pig and poultry-rearing and bartering sunflower seeds for oil. Other tasks, such as weeding, bagging and crop storage, are almost equally undertaken by both women

and men. It is estimated that women do 85% of the planting, 85% of the weeding, 55% of land preparation and 98% of all food processing.

However, decisions to market are mainly made by men (70%), or are made jointly (15%). In rural areas, it is estimated that women's workloads both in the agriculture sector and household considerably exceed those of men. Traditionally, men tend to be responsible for the cash crops, but male labour is usually withdrawn if those crops decrease in profitability. This happened with many crops in the seventies and eighties, when producer prices were unfavorable. When market conditions change, attracting male labour back to such crops may be difficult. In most districts, the MHHs act as employers within the agriculture sector while WHHS are largely employees.

3.8.2 Specific Roles in proposed ACDP Crops

3.8.2.1 Gender Dimension in Beans and Rice Production, Processing and Trading

Women play a major role in rice production in the country including, field opening, planting, weeding, harvesting, bird scaring and other agronomic activities on farm processing and marketing.

Figure 41: Men clearing land at Lwoba

Figure 42: A man slashing around the canals at Bwirya

Figure 43: Boys camped at Lwoba to scare birds

Figure 44: Boy on duty to scare birds at Lwoba

Figure 45: Winnowing, usually done by women

Figure 46: Women selling rice in Pallisa

Sometimes due to gender imbalance, the proceeds from rice sales do not trickle down to the women who have labored in the production process. Youth are less involved in rice production and this causes a danger to future production and food security. Most of the youth prefer to seek jobs in urban areas.

3.8.2.2.Gender role in cassava trade and processing

Both sexes are equally represented in trading, but women, and to lesser extent children, dominate in cassava processing. Growth in cassava production is therefore likely to provide increased employment opportunities for women. However, there is a tendency that as mechanized processing equipment are acquired, men's involvement in cassava processing tends to increase, as they often control and operate these machines. Women may therefore lose some of the benefits of increased employment, as they lose control of some of the income. Steps need to be taken to ensure that this does not happen, e.g. by increasing the access of women to credit for acquisition of post-harvest machinery, and training them to properly operate the equipment. This means that the needs of women should be kept in mind even at the equipment design stage.

3.8.2.3Gender Issues in Coffee Production

The culture in most coffee growing areas especially in Uganda is that, men are in charge of cash crops while women are in charge of food crops. This is due to the social role of men as providers of money for their families while women are seen as providers of food for their families.

However, because men in coffee farming communities nowadays engage in other income-generating activities like animal rearing and small scale businesses; women have become deeply involved in coffee growing. The challenge is that, it is mostly men who sell coffee and determine how the money is used; women are hardly involved in decision making over the use of coffee money. This has reduced the interest of women in coffee growing especially those who are married.

From the findings during farmers' interactions, women were seen to be more involved in several stages of production for example tilling, pruning, harvesting and drying. However, when it came to making decisions on how to spend the earnings it was only a man's decision. Coffee is still seen to be a man's crop and income from the crop benefits more a man than a woman.

3.8.2.4Gender dimension on maize cropping

The Gender Analysis of the Uganda National Household Survey of 2005/06 conducted by MoFED focused also on the selection dynamics for some crops such as maize at household level. From the study, maize crop was mainly grown by male headed households (MHHs) in which, 38% of such households had more than 60% of their plots under maize, as compared to 28 % for female headed households (FHHs). This raises productivity concerns especially among the FHHs and this is important in the planning of ACDP to support involvement and production amongst women.

3.9 Land Issues in ACDP Project Areas

Land tenure refers to the manner in which land is owned, occupied, used and disposed of within a community. No doubt land is the most important and the only reliable physical and economic resource for everybody, especially in predominantly agricultural communities. A properly defined and managed land tenure system is essential to ensure balanced and sustainable development.

Teso Districts (Soroti, Serere etc.) – In Teso region, the most common mode of land ownership is customary system, which is almost the same as customary law in other parts of Northern Uganda. Customary land in Teso region is vested in the respective clans of Teso to hold and manage in trust for the people of Teso. For example, provisions on sale of land in Teso specify that:

a. Customary land in Teso is not for sale by any individual or head of family entrusted with the management of land for the benefit of members of family and future generation;

b. Land can only be sold if it is for 'good reason' and with the permission of the majority of all the family members, whether present or absent, permission of the clan committee and consent of the wife or wives;

c. The clan committee must not allow the sale of land for "bad reasons";

d. The land where the head of family is an orphaned minor must not be sold without the permission of the parish clan committee;

e. Consent will be assumed not to have been given if any of the wife or wives with rights to the land refuses to grant consent and if the majority of the adult children refuse to grant consent.

f. Consent will be assumed not to have been given if the majority of the members attending the parish clan committee meeting vote against the sale of land of an orphaned minor.

Lira District - According to the 5 Years District Development Plan (FY 2010/11 to 2014/2015), to the people of Lira in particular land and their own lives are the only assets left after the conflict in the region destroyed virtually everything they once owned. Majority of population lives in rural areas and vast majority are farmers for whom land is the most essential source of livelihoods. To date, it is one of the many sources of resource-based conflicts in Lira. The Plan further points out that the land question in the district if not handle well then pose a very big source of conflict in society including death, imprisonment, and unproductively, hence the need to see in to it that Land Department is Fully and well-functioning. This can only be done by increasing land right awareness. The worst effects of economic collapse have been mitigated in Lira and the whole of Northern Uganda by the relatively low incidence of landlessness, in the sense of people with no access to land.

Kabale District - In Kabale district, mailo tenancy is either limited or does not exist at all. So far, 1,300km2(75%) of the land in Kabale district is owned customarily. Only 25% of the land in the district is surveyed and owners issued with certificates of titles. Land in Kabale has been fragmented to pieces much smaller than once acre (i.e. 0.4 hectares) and most families live on 3 acres (1.2 hectares) at average. Family members walk as many as 5 km to till their numerous small fragments of land scattered in their locality. District authorities have launched a program to teach and encourage people to consolidate land.

3.10 Typical Farm Roads

Figure 47: A typical farm road at the periphery of the farm in Lwoba Rice Scheme

Figure 48: Existing footpaths for harvesting rice in Lwoba

4 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Policy Framework

4.1.1 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 ACDP, aspects of Environmental Assessment have been integrated into the project in with the objective of ensuring sustainability in the project***.

4.1.2 The National Development Plan 2010-2015

The National Development Plan (NDP) covers the fiscal period 2010/11 to 2014/15. It stipulates the Country's medium term strategic direction, development priorities and implementation strategies. According to the NDP, the share of agriculture in GDP was 51.1 per cent in 1988 and 33.1 per cent in 1997, declining further to 15.4 per cent in 2008. The sharp decline in the share of agriculture in GDP represents significant structural transformation in the economy. ***It is therefore recognized that, there is a compelling need to ensure that productivity growth in agriculture supports the high population growth in addition to reversing the continued dominance of production and export of primary commodities as outlined in ACDP.***

4.1.3 The Uganda Vision 2040

Uganda Vision 2040 provides development paths and strategies to operationalize Uganda's Vision statement which is "A Transformed Ugandan Society from a Peasant to a Modern and Prosperous Country within 30 years" as approved by Cabinet in 2007. Agriculture is the main stay of the Ugandan economy employing 65.6 per cent (UBOS, 2010) of the labor force and contributing 21 percent to the GDP. Despite these, agricultural contribution to the GDP has been declining but remains very important to provide a basis for growth in other sectors. However, agriculture productivity of most crops has been reducing over the last decade mainly due to a number of factors including: high costs of inputs, poor production techniques, limited extension services, over dependency on rain fed agriculture, limited markets, land tenure challenges and limited application of technology and innovation. ***ACDP plans to address issues of productivity, value addition amongst others.***

4.1.4 Agricultural Sector Development Strategy and Investment Plan 2010/11-2014/15

This is the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF's) Development Strategy and Investment Plan (DSIP) for the agriculture sector, covering the period 2010/11 to 2014/15. It is a revision of the 2005/06-2007/08 DSIP and comes at a critical juncture for agriculture in Uganda. This DSIP consolidates and harmonizes all the existing parallel policy frameworks in the agricultural sector into one coherent plan. The DSIP sets the priorities for the five year period and these will be used as a basis for defining spending plans each year under the Medium Term Expenditure Framework (MTEF). ***Some of the commitments in the DSIP are targeted interventions in ACDP hence; the project is consistent with development strategy of the secto***r.

4.1.5 The 2003 National Agricultural Research Policy

The 2003 National Agricultural Research Policy (NARP), guided by the principles of the Plan for Modernization of Agriculture, has a vision based on a market-responsive, client oriented and demand-driven national agricultural research system comprising public and private institutions working in tandem for the sustainable economic growth of Uganda. The NARP calls for decentralization of research on the basis of agro-ecological zones and seeks to implement different mechanisms of funding research on a sustainable basis. ***The aspects of research and marketing of agricultural products mentioned in this Policy are of relevance to pesticides management in the country and are to be addressed by the ACDP.***

4.1.6 Water Resources Policy, 1995

The overall water resources policy objective is to sustainably manage and develop the water resources in a coordinated and integrated manner so as to secure/provide water of an acceptable quality for all social and economic needs. The policy stipulates inter alia:"The first priority in water resources allocation will be the provision of water in adequate quantity and quality to meet domestic demands; and" ***Allocation of water to meet irrigation, livestock, industrial and other demands will be done considering the economic, social and environmental value of water" which is one aspect in Component 1 of ACDP.***

4.1.7 Plan for Modernization of Agriculture (PMA)

The Plan for the Modernization of Agriculture (PMA) has seven pillars. These include research and technology, national agricultural advisory services, agro-processing and marketing, sustainable natural resource utilization, and management and physical infrastructure. The broad strategies for achieving the PMA objectives are, among others; supporting the dissemination and adoption of productivity-enhancing technologies; and ***ensuring the coordination of the multi-sectoral interventions to remove any constraints to agricultural modernization which is consistent with ACDP. Infrastructure improvement in ACDP is in line with PMA pillars as well.***

4.1.8 The National Trade Policy, 2006

The National Trade Policy (2006) is aimed at poverty reduction, promoting employment, economic growth and promotion and diversification of exports, particularly nontraditional exports. The guiding principles of the Policy that have a linkage with the pesticides management are highlighted in the need to mitigate any adverse effects of practices by the country's trading partners. The concerns are dealt with by invoking and implementing trade defense measures as and when appropriate, and taking into account multilateral disciplines in the area. The policy also notes that the country ought to be mindful of the negative social and economic effects that might come with growth in trade, and ensure that mitigating measures and policies are put in place. ***Issues marketing are amongst improvements sought to be addressed in ACDP and is consistent with this policy***.

4.1.9 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. ***The policy recognizes amongst others, the need for the protection of minority groups and, pastoral groups on matters of land which are beneficiaries in the ACDP.***

4.1.10 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. ***ACDP has mainstreamed gender dimensions into its formulation, planning and implementation framework hence, its compliance with the National Gender Policy for Uganda.***

4.1.11 The National HIV/AIDS Policy, 2004

The policy provides the principles and a framework for a multi-sectoral response to HIV/AIDS in Ugandan's world of work. The policy applies to all current and prospective employers and workers, including applicants for work, within the public and private sectors. It also applies to all aspects of work, both formal and informal. ***ACDP will mainstream HIV/AIDS interventions into its plan, programmes and activities more so in its Project Implementation Manual (PIM).***

4.1.12 The Cassava Development Policy, 2007

The Cassava development policy is intended to facilitate increased commercialization of cassava and cassava based products on the domestic and export markets. Moreover, it will advance awareness on fair trade, consumer health safety protection and regulations for the cassava sub sector. The Goal of the Policy is to enhance the contribution of cassava to sustainable food security, income generation and economic development. ***A number of aspects in cassava are to be addressed in ACDP interventions.***

4.1.13 A 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.

4.1.14 The National Policy for the Conservation and Management of Wetland Resources, 1995

The Policy has established principles by which wetlands resources can be optimally used and their productivity maintained in the future and end existing unsustainable exploitative practices in

wetlands. All proposed modifications and restorations on wetlands shall be subject to an EIA, the result of which shall determine whether such restoration or modification shall proceed and if so to what extent. ***The ESMF has a framework for Environmental Assessments for irrigation schemes and valley dams which will be located or in the proximities wetlands. In addition, the project will consider development of community wetland management plans to inform the irrigation activities and water resources use.***

4.1.15 MoWT General Specifications for Road and Bridge Works, 2005

MoWT has in place General Specifications for Road and Bridge Works which detail how contractors undertaking road and bridge works ought to address amongst others, cross-cutting issues (gender, environment HIV/AIDS and OHS). It has specific provisions on how costs for mainstreaming or addressing these cross-cutting issues on road projects can be integrated into the Bills of Quantities to enable their implementation.

4.2 Legal Framework

4.2.1 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 ACDP compliance with the Constitutional obligations on sustainability, an ESMF has been prepared which outlines mechanisms for environment assessment and mitigation measures included therein.***

4.2.2 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 ACDP as well as mechanisms for conducting further assessments on the project sub-components.***

4.2.3 The Agricultural Chemicals (Control) Act, No. 1 of 2006

This Act was enacted to control and regulate the manufacture, storage, distribution and trade in, use, importation and exportation of agricultural chemical and other related matters. Under this Act, the requirement of packaging, labeling or advertisement of agricultural chemicals is relevant in pesticides management to prevent illegal activities related to mislabeling and mis-packaging. In addition, section 13(2) provides for the period in which the seized agricultural chemicals can be detained and the power to dispose them off. The person in whose possession the chemicals were got has to consent in writing for these chemicals to be destroyed by the Government. ***It is therefore important to put in place an effective and efficient mechanism for disposal of the seized/expired chemicals. Similarly, a Pest Management Plan has been developed to among others guide the use of pesticides in ACDP***.

4.2.4 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 ACDP activities.***

4.2.5 Control of manufacture, etc. of agricultural chemicals Act Cap 29

The Act provides for safe manufacture, packaging, store, display, distribution agricultural chemicals. It also has provisions governing the Importation and export of agricultural chemicals. The Act in its Section provides for the establishment, constitution and operation of Agricultural Chemicals Board which has the responsibility to advise government on matters pertaining to agricultural chemicals.

4.2.6 The Agricultural Seeds and Plants Act (Cap 28)

This Act provides for the promotion, regulation and control of plant breeding and variety release, multiplication, conditioning marketing, importing and quality assurance of seeds and other planting materials. It establishes the National Seed Authority and a Variety Release Committee. The Act also establishes the National Seed Certification Service which is responsible for the design, establishment and enforcement of certification standards, methods and procedures, registration and licensing of all seed producers, auctioneers and dealers, advising the Authority on seed standards and providing the Authority with technical information on any technical aspects affecting seed quality. The Act imposes stringent requirements for variety testing. ***Amongst ACDP interventions is to strengthen services of seed testing, certification and marketing.***

4.2.7 The Plant Protection Act (Cap 31)

The Act provides for the prevention of the introduction and spread of disease destructive to plants. Section 4(i) states "Every occupier or, in the absence of the occupier, every owner of land shall take all measures as he or she may be required to take by virtue of any rules made under section 3 and, in addition, such other measures as are reasonably necessary for the eradication, reduction or prevention of the spread of any pest or disease which an inspector may by notice in writing order him or her to take, including the destruction of plants. ***These services governed under this Act are targeted for support in ACDP as well.***

4.2.8 The National Agricultural Research Act, 2005

The National Agricultural Research Act, 2005 provides for the development of an integrated agricultural research system for Uganda for the purpose of improving agricultural research services delivery, financing and management. The overall goal of the National Agricultural Research System (NARS) is to address challenges presented in the Plan for Modernization of Agriculture (PMA) strategy and the NARP principles to provide research services that address in a sustainable manner, the needs and priorities of the majority poor.

4.2.9 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.

4.2.10 The National Environment (Audit) Regulations, 2006

The Regulations reinforce the requirement to undertake Self-Environmental Audits as contained in the EIA Regulations. Normally, under approval conditions of NEMA, it is a requirement to undertake Audits for projects which comply with the EIA requirement as part of the conditions of EIA approval. Further, the Regulations, under Regulation 8 provide that the owner or operator of a facility whose activities are likely to have a significant impact on the environment shall establish an Environment Management System (EMS). Project implementation will comply with Audit and EMS requirements. The Environmental Audit Guidelines for Uganda, 1999 spell out the processes and procedures for the conduct of an Environmental Audit.

4.2.11 National Environment (Wetlands, Riverbanks, and Lakeshores Management) regulations

Regulation 11 (2) spells out traditional and regulated uses of wetland resources in the country. Every landowner, occupier or user who is adjacent or contiguous with a wetland shall have the duty to prevent the degradation or destruction of the wetland and shall maintain the ecological and other functions of the wetland (Regulation 17).

4.2.12 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.***

4.2.13 The Local Governments Act (Cap 243)

The Act creates a decentralized system of government based on the district as the main unit of administration. Administrative powers and functions are devolved from the central government to the local governments. The Act allocates responsibility for service delivery of a number of functions to local government councils (districts, cities, municipalities or town councils) and to lower local government councils (sub-counties / divisions). ***These functions among other include storm water drainage, water services and sanitation which are key in operations of ACDP especially in research based fields.***

4.2.14 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 ACDP has integrated Environmental Assessments in its ESMF in compliance with the Act provisions.***

4.2.15 The Mining Act of 2003

Road construction has auxiliary activities including stone quarrying and borrow materials extraction involve excavations or working where any operations are connected with mining including erections and appliance used in connection with such operations. These activities, therefore, are subject to the

requirements of this Act. Requirements under Part XI for the Protection of the Environment under the Act are therefore, relevant. Such requirements include need for an ESIA and Audits as well as observance of environmental standards for the prevention and minimization of pollution of the environment and waste management. ***Relevant environmental studies are required for this license application as described in Part XI. Ideally, the extraction of stone and murram materials will be undertaken in line with the provision of this Act. Issues of restoration of the sites after murram extraction are important in the operationalization of the ACDP Project.***

4.2.16 The Traffic Act

The Act will be applicable to the project during both its construction and operation. It is relevant to the road project as it seeks to enforce safe utilization of the public roads. For this reason, the Act requires the developers of public roads do take measures that guarantee safety of road users during project implementation. These will include alternate routing of traffic, diversions, safety signalling and the use of traffic wardens/signallers among others.

4.2.17 Water Act, 1995

This Act seeks to promote provision of a clean, safe and sufficient supply of water for domestic purposes to all persons. The basic foundation of the Act's provision is the reconciliation between protecting the environment and ensuring the availability to the population of water of sufficient quality and quantity. ***Water issues come to be addressed in ACDP especially with reference to irrigation aspects.***

4.2.18 Water Abstraction Regulation, 1998

The water abstraction regulation, section 18 provides for the establishment of a controlled mechanism through issuance of permits to regulate the amount of water abstraction. The permit system ensures that use of water resources is environmentally friendly and promotes sustainable development. The regulation requires that a water abstraction permit either for ground or surface water abstraction are pre-requisites for motorized and/or abstracting of quantities above 400m3/day for persons involved in construction(damming, diverting surface water). ***Irrigation considerations may require abstraction permits from DWRM after EIAs are conducted.***

4.2.19 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 ACDP with regard to waste management in irrigation and agro-chemicals components***.

4.2.20 External Trade Act, Cap 88

This Act restricts certain imports (section 3) and empowers the Minister to prohibit the importation or exportation of any goods (section 8). This Act provides Uganda the opportunity to restrict or prohibit the importation of highly hazardous pesticides, especially as the provisions of the Customs Management Act can only be amended through the East African Community.

4.2.21 Uganda National Bureau of Standards Act, Cap 327

The relevant provision of this Act prohibits any person to import, distribute, sell, manufacture or have in possession for sale or distribution any commodity for which a compulsory standard specification has been declared unless such commodity conforms to the compulsory standard or unless the commodity bears a distinctive mark (section 21(1). This Act could be read together with the National Environment Act on chemical standards in developing standards for pesticides use in the country.

4.2.22 The Workers Compensation Act, Cap 225 LOU

This law provides for compensation to workers for injuries suffered in course of their employment. According to the Act, an employee is entitled to compensation for any personal injury from an accident or disease arising out of and in the course of his or her employment even if the injury or disease resulted from the negligence of the employee. Under this Act, compensation is automatic. The compensation is to be paid by the employer whether the worker was injured as a result of his or her own negligence, mistake, omission or commission.

4.3 Related International Conventions and Agreements

4.3.1 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 ACDP for disposal have to be in line with the Basel Convention.***

4.3.2 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. ACDP will observe these provisions when importing agro-chemicals.

4.3.3 The International Maritime Dangerous Goods (IMDG) Code

The International Maritime Dangerous Goods (IMDG) Code was developed as a uniform international code for the transport of dangerous goods by sea. It covers such matters as packing, container traffic and stowage, with particular reference to the segregation of incompatible substances. The Code lays down basic principles; detailed recommendations for individual substances, materials and articles; and a number of recommendations for good operational practice, including advice on terminology, packing, labeling, storage, segregation and handling, and emergency response action. The Code has become the standard guide to all aspects of handling dangerous goods and marine pollutants in sea transport. ***The Code will ensure compliance to international law in the event that Uganda decides on sea transport for its pesticides destined for disposal***.

4.3.4 The FAO International Code of Conduct on the Distribution and Use of Pesticides

It establishes voluntary standards for public and private institutions involved in the distribution and use of pesticides. The revised version of the Code, adopted in 2002, has become the globally accepted benchmark for pesticide management and has enabled many countries to establish and strengthen their pesticide management systems. The Code sets out a vision of shared responsibility between the public and private sectors, especially the pesticide industry and government, to ensure that pesticides are used responsibly, delivering benefits through adequate pest management without significant adverse effects on human health or the environment. ***The PMP in ACDP takes into considerations these provisions to ensure safety in the project.***

4.3.5 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. More people work in agriculture than in any other sector, more workers are injured in agriculture than in any other sector, and pesticides are a major cause of injury and death. In addition more children work in agriculture than in any other sector and they are differently and particularly vulnerable to the toxic effects of chemicals such as pesticides. A specific section of the convention deals with the sound management of chemicals and advises governments to adopt good management practices for chemicals, to inform users adequately about the chemicals they use and to ensure that adequate mechanisms are in place to safely dispose of empty containers and waste chemicals. Application of the Convention is an important step in improving pesticide management and preventing some of the problems that arise from pesticide distribution and use in developing countries. ***These are outlined in PMP for the ACDP.***

4.3.6 Strategic Approach to International Chemicals Management (SAICM)

Uganda UNEP/UNDP Partnership initiative for the implementation of SAICM is intended to assist the Government, through the National Environmental Management Authority (NEMA), to take up the strategic priorities of SAICM Quick Start Program (SQSP), namely: develop and strength national chemicals management institutions, plans, programs and activities to implement the Strategic Approach, building upon work conducted to implement international chemicals-related initiatives; and undertake analysis, interagency coordination, and public participation activities directed at enabling the implementation of Strategic Approach by integrating the sound management of

chemicals in national development priorities and strategies. The main objectives of SAICM required to strengthen measures for sound management of chemicals (SMC) are:

a. Risk reduction: To implement comprehensive, efficient and effective risk management strategies, including risk reduction, risk elimination and pollution prevention strategies, to prevent unsafe and unnecessary exposures to chemicals.

b. Knowledge and information: ensure that knowledge and information on chemicals and chemicals management, and chemical safety is adequate, appropriate, accessible and user-friendly to enable chemicals to be dealt with safely throughout their life cycle by all actors.

The Capacity-building and technical cooperation component aims to:

a. Develop sustainable capacity-building strategies for chemicals management in developing countries and countries with economies in transition and promote cooperation between these countries.
b. Establish or strengthen partnerships and mechanisms for technical cooperation between developed countries and developing countries and countries with economies in transition.
c. Ensure access to information on capacity-building for the sound management of chemicals and enhance transparency regarding donor interests and recipient needs.

Provisions of SAICM have taken into account in the development of PMP for ACDP to ensure information, capacity building and general safe handling of agrochemicals.

4.3.7 IFC EHS Guidelines for Pesticide Manufacturing, Formulation, and Packaging

The IFC Environmental, Health and Safety (EHS) guidelines for pesticides manufacturing and formulation address the synthesis, optimization of the active ingredients, process development (manufacturing), the formulation and packaging of pesticides from these active ingredients. According to these Guidelines, pesticide manufacturing, formulation, packaging and distribution should be conducted in compliance with applicable international standards including:

a. Stockholm Convention on Persistent Organic Pollutants (POPs), which bans or restricts the manufacture and trade of intentionally produced POPs, including some pesticides;
b. World Health Organization (WHO) Recommended Classification of Pesticides by Hazard, which lists active ingredients considered to be obsolete or discontinued for use as pesticides;
c. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade;
d. Food and Agriculture Organization's International Code of Conduct, which includes requirements on the application of the life-cycle concept in the production, management, packaging, labeling, distribution, handling, application, use, and control, including post registration activities and disposal of all types of pesticides, including used pesticide containers; and
e. Food and Agriculture Organization's Revised Guidelines on Good Labeling Practice for Pesticides.

In ACDP, aspects of pesticides and related considerations are addressed by having in place, a Pest Management Plan.

4.3.8 FAO Guidelines on Good Practice for Ground Application of Pesticides, 2001

In 2001, FAO produced a new, revised and expanded series of pesticide application equipment-related guidelines to cover the application of pesticides using any ground based field crop sprayers, including operator carried and tree and bush crop sprayers. Other related guidelines by FAO include:

- Guidelines on good practice for aerial application of pesticides;
  Guidelines on minimum requirements for agricultural pesticide application equipment;
- Guidelines on standards for agricultural pesticide sprayers and related test procedures;
- Guidelines on procedures for the registration, certification and testing of new pesticide application equipment;
- Guidelines on the organization of schemes for testing and certification of agricultural pesticide sprayers in use; and
- Guidelines on the organization and operation of training schemes and certification procedures for operators of pesticide application equipment.

These have been domesticated in Uganda through the Control of Agricultural Chemicals Act Cap 29 whose provisions have guided the preparation of PMP for ACDP.

4.4 World Bank Safeguard Policies

The World Bank Safeguard Policies triggered are:

OP 4.01	Environmental Assessment
OP 4.04	Natural Habitat
OP 4.09	Pest Management
OP 4.11	Physical Cultural Resources
OP 7.50	International Waters
OP 4.12	Involuntary Resettlement

Details of the safeguards relating to the project are summarized on Table below.

Table 1: World Bank Safeguard policies triggered by ACDP

OP No.	Summary of Safeguard Policy	Triggered ?	Component Implications on the Safeguards	Its implications on the ACDP Project
OP 4.01	**Environmental Assessment**: The objective of OP 4.01 is to ensure that projects financed by the Bank are environmentally and socially sustainable, and that, the decision making process is improved through an appropriate analysis of the actions including their potential environmental impacts.	√	Component 1 would support activities related to expanding access to and use of key agricultural inputs. Component 2 would support the rehabilitation and expansion of existing small irrigation schemes for rice, assist formation of water user groups and look at water management and conservation. Component 3 would support activities and investments to improve post-harvest handling of the selected commodities and to improve the efficiency of output markets for these commodities and would also support measures to eliminate bottlenecks and trouble spots in rural access roads and market places. Some of the associated negative environmental and social impacts include water abstraction on downstream users, loss of wetland habitat as a result of the irrigation infrastructure needed, point and non-point pollution of water sources, soil erosion and siltation, water and land-use related conflicts. Most of the environmental impacts will be of low-intensity, minor, site specific and readily managed by farmers, with guidance from the respective Local Governments.	The specific location/ site and scope of all project activities are not yet known. Therefore, an Environmental and Social Management Framework (ESMF) for the entire project has been prepared, reviewed and will be disclosed before project appraisal. Once specific information for individual sub-projects is available, site/project specific ESMPs will be prepared during implementation and prior the start of any physical works.
OP 4.04	**Natural Habitat**: The Bank supports the protection, maintenance, and rehabilitation of natural habitats and their functions. The conservation of natural habitats is essential for long term sustainable development.	√	The watershed related project activities will be carried out in wetlands, rivers and lakes. These habitats may be affected by the proposed project. The project will not support activities that may lead to clearance of any protected ecosystem or critical habitats.	All potential natural habitats that may be affected will be initially screened under guidance provided in the ESMF and then subsequently assessed under the ESIAs and management of any potential impacts included in the respective sub-component ESMPs.

OP No.	Summary of Safeguard Policy	Triggered ?	Component Implications on the Safeguards	Its implications on the ACDP Project
OP 4.09	**Pest Management**: In Bank-financed agriculture operations, pest populations are normally controlled through IPM approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest. The Bank may finance the purchase of pesticides when their use is justified under an IPM approach.	√	Under the proposed project, improved and increased agricultural activities and production may result in increased use of pesticides.	A Pest Management Plan has been prepared.
OP 4.10	**Indigenous peoples**: This policy calls for free, prior and informed consultation that should result in broad community support to the project by the affected indigenous peoples. This policy also emphasizes that World Bank financed projects be designed in such a way as to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate and gender and inter-generationally inclusive.	X	Project implementation will specifically cover Masaka, Mpigi, Rakai, Iganga, Bugiri, Namutumba, Pallisa, Tororo, Butaleja, Kapchorwa, Bukwo, Mbale, Soroti, Serere, Amuru (including Nwoya), Gulu, Apac (including Kole), Oyam, Lira (including Dokolo), Kabarole, Kamwenge, Kasese, Kyenjojo (including Kyegwegwa), Mubende, Kibaale, Hoima, Masindi, Kiryandongo, Ntungamo, Kabale, Bushenyi, Isingiro, Nebbi, Arua (including Nyadri), and Yumbe. There are no indigenous peoples in these districts.	This policy is not triggered because there are no indigenous peoples in the selected project areas.
OP 4.11	**OP 4.11 Physical Cultural Properties**: This policy addresses physical cultural resources, which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance.	√	Although project activities do not involve major civil works, historical and cultural properties may be encountered, either in the rehabilitation and/or extension of existing irrigation schemes and/or roads in the project areas. Therefore Physical Cultural Resources Policy (OP/BP 4.11) is triggered.	This ESMF includes a "chance finds" procedure.
OP 4.12	**Involuntary Resettlement**: This policy observes that involuntary resettlement may cause severe long-term hardship, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out.	√	The project will support a range of sub-components, some of which may require minor land acquisition which could potentially lead to involuntary resettlement and/or restrictions to of access to resources or livelihoods. The social safeguards	The exact locations have not yet been determined for these activities with the exception of the Doho and Mobuku irrigation schemes whose activities and location have already been defined,

OP No.	Summary of Safeguard Policy	Triggered ?	Component Implications on the Safeguards	Its implications on the ACDP Project
			team review concludes that the project may involve very minimal land acquisition of small strips of land required for expansion of irrigation canals and infrastructure under Component 2.	though the engineering design is not yet in place. The Bank's Policy on Involuntary Resettlement (OP/BP 4.12) is triggered and a Resettlement Policy Framework has been prepared to mitigate any associated risks. The preparation of a Resettlement Action Plan (RAP) will be prepared for Doho and Mokubu irrigation schemes. The RPF/RAPs will be used as planning and monitoring tools for addressing all land acquisition issues.
OP 4.36	**Forests**: The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and environmental services and values of forests.	X	By design, the project will not support and/or involve any significant forestry conversion/degradation activities.	This Policy is not triggered because the project will not support and/or involve any significant forestry conversion/degradation activities.
OP 4.37	**Safety of Dams**: The Bank distinguishes between small and large dams where large dams are 15 m or more in height. Dams that are between 10 and 15 m in height are treated as large dams if they present special design complexities. Dams more than 10 m in height are treated as large dams if they are expected to become large dams during the operation of the facility.	X	The Safety of Dams (OP 4.37) policy is not triggered. The project does not include construction of dams. Irrigation schemes will target permanent streams/rivers with enough water for irrigation and downstream use. The irrigation schemes component will involve expansion of two existing schemes irrigating 1000 ha and development of new schemes to irrigate 5000ha. Doho irrigation scheme has an excavation water reservoir of volume 400,000m3, 1.6M deep.	An operation and maintenance manual for each irrigation scheme shall be prepared during technical designs. The O&M manual shall include safety issues among others. FAO Manual on irrigation O&M will be used to ensure scheme sustainability.

OP No.	Summary of Safeguard Policy	Triggered ?	Component Implications on the Safeguards	Its implications on the ACDP Project
OP 7.50	**Projects on International Waterways**: This policy applies to the following types of international waterways: (a) any river, canal, lake, or similar body of water that forms a boundary between, or any river or body of surface water that flows through, two or more states, whether Bank members or not; and (b) Any tributary or other body of surface water that is a component of any waterway described in (a) above.	√	The riparian notification of information on water withdrawal is applicable to all irrigation schemes in the Nile basin. Water for irrigation will be withdrawn from the Nile basin watershed which is shared by 10 countries, namely Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. The current White Nile flows are determined by releases at Jinja and lateral inflow from the Lake Kyoga sub-basin where the proposed rice schemes are located.	The gross water requirements for rice production are estimated at 35,000 m³/ha/year. On the basis of maximum 35,000 m3/ha/year as gross water requirements for rice production, the impact would represent 210 m3/year or 0.5% of the total renewable water resources (39 km3/year). Therefore the water abstraction volume is expected to be minimal. OP 7.50 Projects on International Waterways Policy is therefore triggered. Notification of the riparian states will be done before project appraisal.
OP 7.60	**Projects in Disputed Areas**: Projects in disputed areas may raise a number of delicate problems affecting relations not only between the Bank and its member countries.	X	The project will not be implemented in disputed areas.	This policy is not triggered because it will not be implemented in disputed areas.

5 STAKEHOLDER CONSULTATIONS AND DISCLOSURE

5.1 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 preliminary consultations. Consultative meetings were held during field visits with the key stakeholders and institutions including: MAAIF, NAADS, NARO, MUK, NEMA, Uganda Coffee Development Authority, Local Government Officials, Line Ministries and, Lead Agencies.

5.2 Objectives of the stakeholder consultations

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

- To provide information about the project and to tap stakeholder information on key environmental and social baseline information in the project area;
- To provide opportunities to stakeholders to discuss their opinions and concerns;
- To identify specific interests and the participation of the poor and vulnerable groups can be enhanced; and
- To inform the process of developing appropriate management measures as well as institutional arrangements for effective implementation of the ACDP.


Figure 49: Stakeholder consultations during ESMF study

5.3 Some of the Key Stakeholder Concerns and views

The stakeholders raised some concerns which are reflected in the minutes attached to this report as Annex 10. Below is a summary of key issues:

Issue Raised	Remarks
Opio Sam Oceng – Cassava farmer- Apac District What criteria used in selecting areas of the project? Some areas which are main producers of the ACDP targeted crops are not included in the project!	Support from the proposed project would be concentrated on production and marketing of the selected commodities in twelve (12) geographic clusters. A commodity cluster is an area covering on average 3 districts, with proven potential for one or two of the selected commodities.
Mugume Peter – Farmer (Kabale District) **Mwesigye Elias John – Farmer (Kabale District)** Helping bring pesticides is a welcome undertaking but of recent in the villages, the pesticides are being increasingly abused i.e. committing suicide, killing of birds in rice fields and poisoning dogs. How can such abuses be controlled? How will fertilizers and pesticides be distributed in the project? Will they be free or they will be sold out?	The Pest Management Plan elaborates mitigations to address the challenges. Under the ACDP, 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 work with MAAIF and relevant NGOs to create awareness raising actions that will target the different pesticide users in order to avoid such accidents and incidents.

Mr. Stephen Mugabi **Assistant Commissioner** **Wetlands Management Department** There is need for the project to avail public toilets at the different irrigation schemes as many people are likely to join the rice schemes. There are currently no toilets at Dokho; where do the people go? Sanitation is very critical during the operation phase. Involvement of Wetlands Management Department should be clear right from the start. There is a tendency to bundle the Department under MoWE and under such arrangement, any one comes up that I am from the Ministry!	The rehabilitation should go beyond the irrigation structures and therefore MAAIF should incorporate sanitation issues into their subcomponent designs to cater for sanitation issues. The WMD is a key stakeholder since rice irrigation schemes are typically developed in wetlands.
Gift Grace- Agro-Chemical Shop Attendant of Mo-AgroLinK in Kiryandongo District There is no supervising authority and the sale of fake chemicals is not checked in any way. The town council issues trading license to the drug shop but is not bothered of what is sold.	The PMP recommends that MAAIF works with UNADA and UNBS to address the issue of fake and adulterated pesticides on the market.
Otim Ayita - Agricultural Officer – Lira District When will cotton be promoted and why is it left out in most of Government interventions? People have limited choices that partly explains why wetlands are being degraded	Five focus commodities (maize, beans, rice, cassava and coffee) have been selected according to the priorities articulated in the operationalization framework for the non-ATAAS components of the DSIP. The demand for the selected crops (maize, rice, beans, cassava and coffee) in national and regional markets is high.
Mr. Ssenyonjo Nicholas – Executive Director of Uganda Environment Education Foundation (UEEF) We have been engaged in educating farmers on safe agricultural practices especially regarding use of pesticides. Therefore, MAAIF should engage NGOs like us to implement the project because we are already on the ground.	NGOs have been recognized as very important stakeholders in implementation of the ACDP especially in areas of creating awareness on safe pesticide use. They will be facilitated accordingly.
Dr. Friday Agaba – Commissioner – Principal Medical Officer, Ministry of Health Pesticide abuse has become a serious problem in this country. If the project envisages the use of pesticides, then it should work with the MoH to put in place proper safeguards to ensure that cases of pesticide abuse do not increase.	MAAIF will continue to liaise with MoH under the ACDP to ensure that the health impacts of the ACDP through pesticide use are minimized. In addition, MoH will as well provide statistics related to pesticide misuse such as poisonings etc.
Mr. Julius Oboth – Imports Officer at Uganda	

Revenue Authority. Over the years, we have engaged in inspection to ensure that banned and fake pesticides are not imported into the country. We shall continue working with MAAIF Inspectors to address this issue.	It is very critical for MAAIF Inspectors to be present at the different entry points to help URA identify fake pesticides. In addition, MAAIF should train URA Staff accordingly as the pesticide formulations and trade names continue to change over time.
Mr. Stephen Okia – Analyst at Government Analytical Laboratory – Wandegeya GAL has the capacity to analyse pesticides to determine quality as well as for environmental monitoring purposes.	GAL will play an important role in testing of pesticides as part of its mandate.
Atwine Esther-District Agriculture Officer - Ntungamo Production of crops in commercial quantities especially for sale and regional market is possible but the country lacks agencies to deal in the sale of food crops unlike coffee which is spearheaded by UCDA how is rice, beans and cassava traded?	**Activity 3.3: National level agribusiness and marketing support.** The aim is to link up the ACE with regional and international markets through agribusiness agreements and networking with exporters. The project will work at national level with value chain stakeholders and their organizations.
Ongor Joseph **Wetlands Management Department** Get ways of equitable sharing of household incomes from sale of crops. When crops are produced, all proceeds are taken by men and women are left out and all money used by men to marry other women. Of recent, rice has become a cash crop though it also serves as a food crop however, the laws on wetlands don't allow people to reclaim wetlands yet MAAIF in this project is promoting rice cultivation. Has MAAIF come up with mechanisms of working with Wetlands Management Department on sustainable cultivation in wetlands?	ACDP project concept and proposal development provides a clear analysis on key issues affecting several categories of beneficiaries of ACDP such as gender and youth and related regional imbalance in respect to agriculture. In addition, sex disaggregation of activities, approaches and monitoring takes in account gender challenges and specific impacts in increasing agricultural productivity of the selected commodities. The Consultant recommends that MAAIF together with the Wetlands Management Department embarks on an exercise to formulate Community Wetland Management Plans and update those others where they exist for a smooth implementation of the irrigation component of ACDP.
Kasimbazi James- District NAADs Coordinator-Kabale District The rainy seasons are increasingly becoming shorter due to unpredictability of the weather therefore, is government putting aside money for research into fast maturing crops to cope with rampant short rains?	It is necessary for MAAIF through research by NARO to deploy in the production system with the diversity needed not only to adapt to the new climatic conditions but also to the new pathogens that might arise as a result of shifting climates.

Mr. Edmund Kananura **Uganda Coffee Development Authority**	
Funding – Extension services are currently very inadequate. UCDA recommends that Government supports and funds coffee extension services to fulfill the objectives of the national coffee policy. Since coffee is vital to the national economy, it is important for coffee as a sector to have particular of separate extension services. Every Sub County should have a coffee extension officer. UCDA currently has only 28 Coffee Extension Officers!	Extension services are very critical to empower the smallholder farmers with knowledge on crop production to ensure the goals of ACDP are achieved. Therefore, MAAIF should consider recruitment of more extension workers.
Coffee planting – There is need to plant more coffee in addition to rehabilitation of old plantations. Therefore, there is need for NAADS to work with UCDA to identify the priority areas for new coffee plantations or those that require rehabilitation	Working together as agencies with a common goal of improving agricultural production in Uganda is critical.
Ms Patricia Ejalu – Deputy Executive Director – Technical, UNBS	
The current number of staff is 240 short of the required number estimated at 463 staff. This staffing gap continues to limit the organization in executing its mandate. For example, out of 35 entry border points, only 17 are currently being manned by UNBS.	There is need for UNBS to work together with ACB within MAAIF to control the entry and the continued presence of fake pesticides on the market. In addition, UNBS needs to recruit more staff to match the existing inspection needs in general.
Mr. Tony Kiwanuka – ESIA Assistant at NEMA	
Rice mainly grows in wetlands; it is important to map out the sections of wetlands to be utilized.	Very important issue given the need to preserve sections of wetlands for ecological functions. With the support of the Local Government, the ACDP implementation needs to initiate efforts targeting the demarcation of wetland boundaries from community and individual land. Once the process of demarcating boundaries is on course, then buffers zones can be put in place as a measure to reinforce the 'respect' for those boundaries.
It is also important to involve the local leadership from the start of the project so as to understand the key concerns of the stakeholders.	Preliminary consultations held during this ESMF preparation. More interactions will ensue at the ESIA/RAP stages.
It is important to obtain the required permits from NEMA for activities to be carried out in the wetlands.	It is a requirement to obtain a Wetland User Permit in addition to conduct of ESIAs before the rice schemes commence.

Dr. Mark Erbaugh – IPM CRSP in Uganda	
Constraints to IPM Adoption – The farmers have been ignored for a longtime and don't know what to do.	There is need for MAAIF or Government to show interest in what they (farmers) do. The farmers need to be trained to build their confidence. There is need to demonstrate to them and to make them participate. This can be done through village schools that can be run by extension staff to teach the farmers.
Extension workers need training in areas of pest and disease identification, IPM and alternatives to pesticide use as well as in-service training i.e. new areas of science to help them do their job. In addition, there is need to redefine the role of extension workers.	Critical issue. The Pest Management Plan elaborates the training requirements for the extension staff and farmers at different levels.
Pesticides Misuse – There is need to sensitize the masses. An interesting example is the practice of spraying harvested tomatoes with fungicides to preserve tomatoes sold in markets.	There is need for more monitoring and surveillance as well as testing of food on the markets for pesticide residues and contamination.

6 PROJECT ACTIVITIES, IMPACTS AND MITIGATIONS MEASURES

6.1 ACDP Project Activities

6.1.1 Irrigation development activities

The project is proposed to expand and develop selected gravity irrigation schemes in lowlands totaling 6,000 ha of irrigated land in the 10 targeted Districts in cluster 2 (Iganga, Bugiri and Namutamba), cluster 3 (Pallisa, Tororo and Butaleja), cluster 5 (Soroti and Serere), cluster 6 (Amuru and Nwoya), cluster 7 (Lira), and cluster 10 (Hoima). The exact locations for the new irrigation schemes have not yet been selected, though they are expected to fall within the above-listed 10 districts for rice commodity. Doho and Mobuku irrigation schemes are the only ones whose activities and locations have already been defined. In some cases, a scheme could lie astride two districts.

The following works are envisaged in the existing schemes: (i) expansion of Mubuku irrigation scheme (100 ha) in Phase IIB expansion area with existing diversion weir (on Sebwe River) and main canal, will entail establishment of the secondary irrigation and drainage network. (ii) expansion of Doho rice irrigation scheme (Bwirya and Lwoba sectors which total 900 ha and currently cultivated by out-growers), will entail construction of the irrigation and drainage networks from the existing diversion weir and if deemed necessary construct a protection dykeagainst the flooding from Manafwa River. Water for irrigation will be abstracted from the Nile basin watershed which is shared by 10 countries namely, Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. On the basis of maximum 35,000 m3/ha/year as gross water requirements for rice production, the impact would represent 210 m3/year or 0.5% of the total renewable water resources (39 km3/year). Therefore, the water abstraction volume is expected to be minimal.

The project will prioritize expansion of existing schemes (about 1,000 ha) and the development of small (about 3,000 ha) and medium (about 2,000 ha) scale schemes, and will not support construction of large scale irrigation structures in order to minimize extent of environmental and social impacts.

In general, the development of lowlands gravity irrigation schemes will be composed of the following infrastructure: diversion weir from the river, main canal from the weir to the irrigated area, distribution network canals, drainage network, internal road, protection dykes (in case of flooding risk), and land leveling. Other amenities/equipment required for the irrigation infrastructure will be part of irrigation infrastructure. Dams are not required because the irrigation schemes will target permanent streams/rivers with enough water for irrigation and downstream use.

6.1.2 Access roads rehabilitation and improvements works

The project will not support opening up 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 reshaping (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.

6.1.3 Storage Warehouses

The market infrastructure under component 3 will include rehabilitation and/or construction of storage facilities/structures (network of warehouses and feeder stores) mainly at the Area Cooperative Enterprises (ACE) level of 500 metric tons each. At this moment in time, it has not yet been determined whether central warehouses of a larger capacity (5000 tons) may be needed.

6.2 Positive Impacts

The project will have a number of positive social impacts for people such as: creation of employment opportunities for the local workers to be recruited on the project especially amongst neighboring communities which will be a positive impact; there will be improved accessibility, trade and commercial opportunities after the planned rehabilitation of community access roads which will enhance commercial opportunities in the beneficiary areas; ACDP will provide a source of income to the local communities through leasing of their lands as sources of construction materials for rehabilitation for community access roads. In addition, there will be improved delivery of social services through improvement of accessibility to markets and other public and social amenities services such as health and education. ACDP will provide a source of additional income for women during rehabilitation of community access roads through employment of women to work on the roads through which, women will be able to earn additional income for their personal and domestic needs.

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. ACDP will further promote sustainable water use through improved rehabilitation of irrigation infrastructures which will promote sustainable water management practices for increased productivity of the selected commodities; the planned expansion of irrigated lands will further enhance crop production and income at household levels. The rehabilitation of the rice schemes will enable farmers to diversify their crop and venture into other enterprises like vegetables and aquaculture rather than relying only on rice growing.

ACDP will provide support towards strengthening the capacities of the Phytosanitary and Quarantine Services within the Department of Crop Protection thereby guaranteeing the supply of quality inputs. The planned Preparation of Pest and Disease Regulatory Tools will support the development of regulations for pesticide registration and control, including for application equipment. Furthermore, there will be support to the registration of pesticides, dealers and premises that are handling pesticides which will go a long way to control marketing of adulterated inputs. The project will create awareness on pesticide aspects such as safe usage, handling and disposal of pesticides, including support to a pesticide poison information facility.

The development of seed demand information system will serve to inform stakeholders about availability, quality and quantities of seed materials. Value addition and marketing in the project seeks to increase the quality of farmers' products on the production side, and to ensure more efficient linkages to market opportunities in a manner that increases the share of final price received by the farmers.

ACDP is expected to have significant positive impact on social and poverty conditions by increasing productivity and production of the selected commodities as well as focusing to reach and promote smallholding farmers. It will bring the needed support to Water Users' Groups so that they can better organize water management and maintenance of catchments to ensure irrigation sustainability. The process has been designed to ensure the inclusion of women and youth in the management of farms (and/or agribusiness) enterprises. Affirmative actions to include youth and women in activities will include, but not limited to training, financial access, land access and use (on the irrigation schemes), and access to inputs.

Potential Negative Impacts and Safeguards Issues

The project will support a range of sub-components, some of which may require minor land acquisition which could potentially lead to involuntary resettlement and/or restrictions to of access to resources or livelihoods. The project may involve very minimal acquisition of (compensation for) any small strips of land required for expansion of irrigation canals and infrastructure under Component 2.

Some of the associated negative environmental and social impacts include water abstraction on downstream users, loss of wetland habitat as a result of the irrigation infrastructure needed, point and non-point pollution of water sources, soil erosion and siltation, water and land-use related conflicts. Most of these impacts are minor or of low-intensity, site-specific and thus relatively straight forward to manage, with participation of the Local Governments and WUAs. Infrastructures like dams will not be considered as they could lead to flooding properties, settlement and affect biodiversity ecosystems.

The likely environmental and social impacts of roads rehabilitation are expected to be minor given the low mechanized road works that will be involved. Although project activities do not involve major civil works; historical and cultural properties may be encountered, either in the rehabilitation and/or extension of existing irrigation schemes and/or roads in the project areas. Component 1 and 3 involve irrigation and infrastructure rehabilitation activities (roads, irrigation related infrastructure, grain storage and processing facilities).

7 PROCEDURES FOR ACDP SUBPROJECT PREPARATION AND ASSESSMENT

7.1 Environmental Screening under OP 4.01 Environmental Assessment

The classification of each 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 ACDP Project has been assigned Environmental Category B**. Therefore, no sub-project is expected to fall under EA Category A. The environmental and social screening of each proposed sub-project will result in its classification in one of the three categories - A, B or C, depending on the type, location, sensitivity and scale of the subproject and the nature and the magnitude of its potential environmental and social impact:

Category A: An ESIA is always required for projects that are in this category. Impacts are expected to be 'adverse, sensitive, irreversible and diverse with attributes such as pollutant discharges large enough to cause degradation of air, water, or soil; large-scale physical disturbance of the site or surroundings; extraction, consumption or conversion of substantial amounts of forests and other natural resources; measurable modification of hydrological cycles; use of hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances. The impacts under this category affect broader area than the sites or facilities subject to physical works. **Such subprojects would require a full ESIA.**

Category B: Any project which is likely to have potential environmental and social impacts, which are less adverse than those of 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 category-A sub projects. Although an ESIA is not always required, some environmental analysis is necessary. Such subprojects would require an ESMP.

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

7.2 Environmental and Social Assessment in Uganda

The key regulations for environmental and social assessment in Uganda include the National Environment Act, the EIA Regulations, 1998, the EIA Guidelines of 1997 and the National Environment (Audit) regulations, 2006. The National Environment (Environmental Impact Assessment) Regulations, 1998 define the role of ESIA as a key tool in environmental management, especially in addressing potential environmental impacts at the pre-project stage. The regulations define the ESIA preparation process, required contents of an ESIA, and the review and approval process including provisions for public review and comment. The regulations are interpreted for developers and practitioners through the Guidelines for Environmental Impact Assessment in Uganda (1997). Although assessments nowadays

conducted and submitted to NEMA are now termed "Environmental and Social Impact Assessment", in common with best international practice, this term is not used in the environmental Regulations or Guidelines. The acronyms EIS and EIA are used in reference to environmental impact statement and environmental impact assessment respectively. However, the acronyms ESIS and ESIA are used herein to refer to environmental and social impact statement and environmental impact and social assessment respectively to include the social component in line with best international practice. The section below illustrates the steps involved during environmental and social assessment and management process as per Ugandan regulations that will lead to the review and approval of subprojects under the ACDP.

7.3 Key Steps

The section below illustrates the steps involved during environmental and social assessment and management process as per Ugandan regulations and World Bank safeguard policies that will lead to the review and approval of subprojects under the ACDP.

7.3.1 Step 1: Screening of Activities and Sites

MAAIF will carry out scoping and screening of the sub-projects using the Environmental and Social Screening Form (ESSF) in Annex 1. 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.

7.3.2 Step 2: Assigning the appropriate Environmental Categories

a. MAAIF will then assign the appropriate environmental category to the subproject based on the information contained in the ESSF and the national criteria for categorization. The potential categories, in line with the National Environment Act and EIA Guidelines are:

b. 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 (see Annex 3 an extract of the NEA), i.e. 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. Therefore, based on the final design of the irrigation sub-components, and since they are implied under list 4 in the Third Schedule of NEA, these may be subjected to a full Environmental and Social Impact Study (ESIS). The rest of the sub-projects will either require a Project Brief or ESMP, or may be exempt.

c. 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.

Activities that are determined to have no significant or adverse potential impact on the environment (List A, annex 2 of the 1998 EIA Guidelines, see Annex 4 herein). Projects defined as List A will not need any further work as they are predicted to have little or no impact. But a Project Brief may be required to be submitted to NEMA. These will likely be Category C projects under World Bank categorization.

7.3.3 Step 3: Carrying out Environmental Assessment

The ESIA will be conducted by the consultancy firms registered by NEMA. However, Project Briefs may be prepared by non-NEMA registered persons. A Project Brief doesn't require preparation of ToRs but their approval is done by NEMA. However, in case an ESIA needs to be undertaken, the ToRs for the study will be prepared by implementing agency and reviewed and approved by NEMA. 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.

According to the National Environment Act, "project brief" means a summary statement of the likely environmental effects of a proposed development referred to in section 19. Unlike the ESIA, a project brief does not require a scoping report and neither submission of terms of reference 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 decision making. According to Regulation 5 of the EIA Regulations, 2006, a Project Brief 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 projected 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. the materials that the project shall use, including both construction materials and inputs;
f. the 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;
i. Any other matter which may be required by the Authority.

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

7.3.4 Step 4: Public Consultations and Disclosure

Public consultation will be initiated during the scoping and ESIA preparation stages and views of stakeholders (general public and lead agencies) have to be included in a Project Brief as well. Public consultation will also be an integral part of the process throughout the planning and execution of the project. MAAIF 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 ESIAs and RAP where applicable. For this purpose, public contact drives shall be organized by MAAIF and public awareness shall also be created with NGO's and other social organizations active in the affected areas. 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 and Resettlement Action Plans. After clearance, the assessment reports (ESIS, RAPs, and PBs etc.) shall be disclosed both in Uganda through the daily print media by Implementing Agency and at WB's Infoshop by IDA.

7.3.5 Step 5: Review and Approval

Following internal review of the ESIS or PB, by the respective implementing agency and the Bank the ESIS or PB will be forwarded to NEMA for final review and decision (approval or disapproval). If the Executive Director is satisfied that the subproject will have no significant impact on the environment, or that the assessment (Project Brief or ESIS) discloses sufficient mitigation measures to cope with the anticipated impacts, he may approve the project. The Executive Director of NEMA or his delegated official shall then issue an EIA Certificate of Approval for the project.

It is important to note that this 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 in the Ministry of Lands, Housing and Urban Development (MoLHUD). This is detailed in the RPF for the ACDP project prepared alongside this ESMF.

7.3.6 Step 6: Environmental Monitoring

Environmental and social monitoring aims at checking the effectiveness and relevance of the implementation of the proposed mitigation measures. Monitoring exercises should be undertaken in sequences and frequencies stipulated in the ESIS, PBs, RAPs, or ESMPs. Local Government leaders, District Environment Officers, Community Development Officers as well

as NGOs and CBOs will undertake monitoring exercises as required by the National Environmental Act. The District Environment Officer in conjunction with the District Community Development Officer will monitor the implementation of environmental and social mitigation measures.

The monitoring indicators will be developed by implementing agency's Environmental Specialists based on the mitigation measures and the ESMP or RAPs. Each subproject progress report will include monitoring of the RAP and other social issues covered by the ESMF. At the end of subproject construction phase, a Certification for Compliance integrating Environmental and social issues for the completion of works issued by implementing agency. The respective ESMPs will have to be updated by MAAIF before handing over the ACDP facilities to the farmers.

MAAIF will have the lead role in monitoring to ensure that various project environmental and social obligations are met, and will ensure that the requirement for an environmental and social audit is fulfilled not less than 12 nor more than 36 months after project completion or commencement of operations respectively in line with the National Environment Act and the Audit Regulations of 2006.It is critical to note that NEMA has a regulatory coordinating role in monitoring of compliance with permits, standards, regulations and all approval conditions.

7.4 Other Safeguard Documents

7.4.1 Community Based Wetland Management Plans (CBWMPs)

It will be much easier to implement the irrigation sub-project of ACDP's nature in an area that has a Community based Wetland Management Plan for political and stakeholder considerations. The process of coming up with a CBWMP is usually consultative and participatory in nature and this gives an opportunity for project implementers to instill and strengthen a sense of ownership in communities over project outcomes. A CBWMP is developed by taking various steps which include identification of stakeholders, performing a resource analysis, selection of representatives, identification of issues and opportunities, developing a management plan, seeking feedback and approval and finally implementation of the management plan. The Consultant recommends that the MAAIF together with the Wetlands Management Department embarks on an exercise to formulate management plans and update those others where they exist for a smooth implementation of the irrigation component of ACDP, limiting this to only wetland systems where the irrigation sub-component shall be implemented. The CBWMP should typically include the following:

1. Introduction
2. Summary of management commitments
3. Existing natural environment
4. Existing cultural and social value and use
5. Potential impacts and threats
6. Management and monitoring commitments
7. Implementation and review
8. Appendices.

7.4.2 Pest Management Plan

Since the ACDP triggers OP 4.09 for pest management, a Pest Management Plan has been prepared. The Pest Management Plan is meant to enhance IPM within Uganda to ensure a guided acquisition, storage, handling and application of pesticides. The plan includes development of comprehensive strategies for handling, transportation, application and disposal of pesticides in compliance with national and international requirements relating to different agrochemicals. The PMP addresses relevant stakeholder concerns about pests and pesticides. It stresses the need to monitor and mitigate negative environmental and social impacts of the ACDP (which includes the use of pesticides) and emphasizes the need for an integrated approach to the management of pests in line with Uganda's strategies on IPM adoption as well as World Bank requirements on pest management and makes provision for adequate measures to enable the Project sustain the adoption of IPM techniques. The scope of the pest management plan includes:

- A history of pest problems, present pest problems and crop history;
- Analyzes the vulnerability of Uganda to pest attacks;
- Quantifies the losses attributed to these pests and diseases;
- Identifies the key pests and diseases of the major crops in Uganda;
- A review of the impact of the current pest control measures;
- Proposes appropriate integrated pest management strategies for the pests and diseases;
- Defines an appropriate implementation strategy for the proposed measures;
- Comprehensive strategies for handling, transportation and application of pesticides in compliance with national and international requirements relating to the different chemicals;
- The safe transport, storage and disposal of pesticides and monitoring aspects;
- Identifies capacity building and training needs;
- Defines/outlines the outstanding relevant research areas.

7.4.3 Resettlement Policy Framework

The project will support a range of sub-components, some of which may require minor land acquisition which could potentially lead to involuntary resettlement and/or restrictions of access to resources or livelihoods. The 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 infrastructure under Component 2. The exact locations have not yet been determined for these activities with the exception of the Doho and Mobuku irrigation schemes whose activities and location have already been defined, though their engineering designs are not yet ready. The Bank's Policy on Involuntary Resettlement (OP/BP 4.12) is triggered and a Resettlement Policy Framework has been prepared to mitigate any associated risks. The preparation of a Resettlement Action Plan (RAP) will be prepared for Doho and Mobuku irrigation schemes. The RPF/RAPs will be used as planning and monitoring tools for addressing all land acquisition issues.

7.5 Grievance Redress Mechanism

Grievance redress mechanisms provide a way to provide an effective avenue for expressing concerns and achieving remedies for communities, promote a mutually constructive relationship and enhance the achievement of project development objectives. Grievance redress mechanisms are increasingly important for development projects where ongoing risks or adverse impacts are anticipated. They serve as a way to prevent and address community concerns, reduce risk, and assist larger processes that create positive social change. It has been learned from many years of experience that open dialogue and collaborative grievance resolution simply represent good business practice both in managing for social and environmental risk and in furthering project and community development objectives.

7.5.1 Community Expectations When Grievances Arise

When local people present a grievance, they generally expect to receive one or more of the following:

- Acknowledgment of their problem
- An honest response to questions about project activities
- An apology
- Compensation
- Modification of the conduct that caused the grievance
- Some other fair remedy.

In voicing their concerns, they also expect to be heard and taken seriously. Therefore, the project's PCUs must convince people that they can voice grievances and the project will work to resolve them without retaliation.

7.5.2 Procedures and Time Frames

There is no ideal model or one-size-fits-all approach to grievance resolution. The best solutions to conflicts are generally achieved through localized mechanisms that take account of the specific issues, cultural context, local customs, and project conditions and scale. In its simplest form, a grievance mechanism can be broken down into the following primary components:

a. Receive and register a complaint.
b. Screen and validate the complaint.
c. Formulate a response.
d. Select a resolution approach, based on consultation with affected person/group.
e. Implement the approach.
f. Settle the issues.
g. Track and evaluate results.
h. Learn from the experience and communicate back to all parties involved.

7.5.3 Grievance Prevention

There are ways to proactively solve issues before they even become grievances. Implementers should be aware and accept that grievances do occur, that dealing with them is part of the work, and that they should be considered in a work plan. Implementers should do the following:

a. **Provide sufficient and timely information to communities**. Many grievances arise because of misunderstandings; lack of information; or delayed, inconsistent, or insufficient information. Accurate and adequate information about a project and its activities, plus an approximate implementation schedule, should be communicated to the communities, especially PAPs, regularly. Appropriate communication channels and means of communication should be used.

b. **Conduct meaningful community consultations**. MAAIF should continue the process of consultation and dialogue throughout the implementation of the project. Sharing information, reporting on project progress, providing community members with an opportunity to express their concerns, clarifying and responding to their issues, eliciting communities′ views, and receiving feedback on interventions will benefit the communities and the project management.

c. **Build capacity for project staff, particularly community facilitators and other field-level staff**. The community-level facilitators and field-level staff of MAAIF should be provided with adequate information on the project such as project design, activities, implementing schedules, and institutional arrangements as well as enhanced skills in effective communication, understanding community dynamics and processes, negotiation and conflict resolution, and empathizing with communities and their needs. Building trust and maintaining good rapport with the communities by providing relevant information on the project and responding effectively to the needs and concerns of the community members will help solve issues before they even become grievances. It is also important that community facilitators and field-level staff provide regular feedback on their interactions with the communities to the higher levels of the implementing agencies.

7.5.4 Anticipated Grievances in ACDP

Under the project some of the likely grievances will include:

a. Conflicts over ownership of rice fields or wetlands and/ or communal access for other uses such as grazing, watering animals, harvesting papyrus for making mats, fishing, etc.
b. Conflicts over water resources
c. Issues of livestock grazing and watering in rice fields infrastructures
d. Issues relating to compensation and restoration of borrow pits
e. Distribution of agro-chemicals
f. Community access roads location

7.5.5 Mechanism under ACDP

Local grievance redress committees (LGRC) will be initiated at the village level to record grievances and also help in mediation. This committee will comprise the LC I Chairperson, a trusted village elder, a religious representative, an elected PAP 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 Sub County level will comprise the LC III Chairperson, Sub County Chief, a representative of vulnerable groups (women etc.) and the Councilor of the Parish. At the District Level, the Grievance Redress Committee will be established to deal with any grievances unsettled at the village level. The Grievance Redress Committee at the district will at a minimum comprise the LC3 representative, representatives of vulnerable groups, District Land Officer/Surveyor, District Community Development Officer and a Grievance Officer from the implementing agency who will oversee and coordinate grievance issues at the village level including setting up of LGRCs, provision of Grievance Logbooks and related logistics, training and orientation of LGRCs, and providing advice on grievance resolution as well as compiling records of all ERT III grievances raised and their mediation for the whole district. The grievance mechanism for the implementation process is as follows:

a. The LGRC will interrogate the PAP in the local language and complete a Grievance Form which will be signed by the leader of the LGRC and the PAP/complainant. This will then be lodged in the Grievance Log/Register provided by the Grievance Officer;

b. The PAP should expect a response from the LGRC within seven days of filing the complaint. If the issue is not resolved, the LGRC will forward the complaint to the GRC at the Sub County;

c. The GRC at the Sub County will be given a fourteen day notice to hold a meeting. Two days after the meeting, the Sub County GRC will call the PAP and LGRC for discussions and resolution. The resolution will be presented to the PAP in written form within the same day of the meeting. If there is no resolution to the grievance, the GRC at the Sub County and the PAP shall then refer the matter to the GRC at the District;

d. The GRC at the District will be given a fourteen day notice to hold a meeting. Two days after the meeting, the GRC will call the PAP and LGRC for discussions and resolution. The resolution will be presented to the PAP in written form within the same day of the meeting;

e. If there is no resolution to the grievance, the GRC at the district and the PAP shall then refer the matter to the District Land Tribunal for land-related issues and to MAAIF head office for all other grievances;

f. Appeal to Court - The Ugandan laws allow any aggrieved person the right to access to Court of law. If the complainant still remains dissatisfied with the District Land Tribunal or MAAIF top management in Kampala, the complainant has the option to pursue

appropriate recourse via judicial process in Uganda. Courts of law will be a “last resort” option, in view of the above mechanism.

8 ESMF IMPLEMENTATION FRAMEWORK

8.1 Ministry of Agriculture, Animal Industry and Fisheries

Mandate and Responsibility – MAAIF is responsible for policy formulation, planning, setting standards on irrigation, aquaculture and water for livestock. The Crop Protection Directorate of MAAIF 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 Ministry of Agriculture, Animal Industry and Fisheries - MAAIF will be the main implementing unit of this project at national level, working in liaison with local governments in the respective districts.

Safeguards Capacity–The Ministry does not have Environmental and Social management specialists. Given the fact that agricultural activities contribute cumulatively to environmental degradation in Uganda, there should be residential in-house capacity in MAAIF for environmental management. It is therefore recommended that MAAIF creates in-house positions of Environmental and Social Development Specialists to handle safeguard issues, to ensure effective compliance on implementation, monitoring and reporting on environmental and social issues including land acquisition.

8.2 Ministry of Water and Environment

The Ministry of Water and Environment, which is mandated with the conservation, use and management of the country's national water resources, will offer technical guidance and supervision to the project as regards the water rights and the design and construction of irrigation infrastructure, ponds and other water reservoirs. With respect to water for production, the National Water Policy of 1999 mandates the MoWE through the Directorate of Water Development (DWD), to promote the development of water supply for agricultural production in order to modernize agriculture and mitigate effects of climatic variations on rain fed agriculture. MoWE initiates policies and/or sets and enforces national standards and priorities for land and water management. It is mandated to promote the development of water for agricultural production, ensure compliance to land and environment rules and regulations.

Capacity - MoWE does have in-house capacity in terms of qualified staff to implement this ESMF.

8.3 Wetlands Management Department

As the national lead agency, the roles of the Wetlands Management Department include:

- liaising with, and building the capacities of, other agencies, in particular, local governments and national government agencies, to deal with wetlands issues within their jurisdiction;
- drafting and proposing policy and legal frameworks for wetlands management;
- undertaking monitoring and inspection of wetlands;

- promoting and collaborating in research on wetlands and their management;
- ensuring integration of wetlands issues into policies and strategies of other sectors, e.g. agriculture, forestry, fisheries, water, industry, rural and urban planning;
- programming the WSSP by preparing medium-term (three-year) plans and annual operations plans, etc. in collaboration with other implementation partners;
- mobilizing resources for implementation of Water Sector Support Programme (NWSSP);
- overseeing and monitoring implementation of NWSSP;
- Reporting periodically to the parent ministry on the performance of the sub-sector.

Capacity - The Department of Wetlands Management is still understaffed and under-resourced with respect to the scale of its tasks. However, the Districts also have a mandate to protect and monitor wetland use in their jurisdictions.

8.4 Agricultural Chemicals Control Board (ACB)

This is a government agency responsible for controlling the use of agricultural chemicals in Uganda mainly for phyto-sanitary plant/crop protection purposes. 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 ACDP will include:

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

Capacity– ACB has a low laboratory staff capacity with only 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 ACDP 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.***

8.5 Role of Office of Chief Government Valuer

Valuation of properties and or compensation is the responsibility of the Chief Government Valuer who also approves District Compensation Rates. A copy of these rates is available at every District. The application of the valuation exercise on ground will be done in the presence of at least two local council leaders with the participation of the affected persons. Values assigned to assets must be based on the market rates approved by the respective districts. Where this is not possible, the Chief Government Valuer (CGV) will be engaged to do this. In the

event that a Government Valuer handles this process, the depreciation cost will not be imputed and the consent of the affected person on the outcome of the process must be sought in order to arrive at agreements on the total profile of losses and compensation.

8.6 Ministry of Health

Community Health (CH) Department of the Ministry of Health in Uganda comprises of the cross-cutting areas of health promotion, disease prevention, and community health initiatives, environmental health, school health, as well as gender and health. The Department's major objective is to increase community awareness and health literacy on disease prevention and promotion of healthy lifestyles in order to have a healthy and productive population in Uganda. To achieve this objective research is critical for evidence based policy and decision making. Environmental health programme is one of the main components of the current National Health Policy of Uganda as it is evident that environmental factors are major determinants of public health outcomes. The main objective of the programme is to contribute to the attainment of a significant reduction in morbidity and mortality due to environmental health related conditions.

In the absence of systematic data collection related to pesticide poisoning (accidental or intentional), it is difficult to understand and tackle the problem. The Ministry of Health is expected to keep records on pesticide poisoning and accidents. The Ministry needs to be supported for the collection and keeping of accurate statistics on these events. The district hospitals and Health Centers in the cluster districts will set up databases on incidence of pesticide poisoning, effect of pesticides on human health and environmental contamination. Currently, the data on pesticide poisoning and accidents resulting from pesticides use or disposal must be 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 ACDP, 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. The department has experts to address pesticides issues but need support to gather information as well as to create awareness on safe pesticides use.

8.7 Ministry of Gender, Labour and Social Development

Ministry of Gender, Labour and Social Development (MGLSD), working through

Community Development Officers (CDOs) at district and sub–county level will be responsible for spearheading and coordinating gender responsive and community development, in particular, sensitizing smallholders to form groups.

8.8 National Agricultural Advisory Services

National Agricultural Advisory Services (NAADS) will, as per its mandate, will be responsible for advisory services to farmers.

Capacity – NAADS has a limited number of extension workers. However, District agricultural staff (DAOs, DPOs) together with other extension workers at Sub-county level will work together with NAADS to implement the project.

8.9 Ministry of Works and Transport

The mandate of this Ministry is to promote an adequate, safe and well-maintained transport infrastructure, an efficient and effective communications system, safe housing and buildings, and to contribute to the socio-economic development of the country. With regards to ACDP, the respective District Engineers will work closely with MAAIF on community access roads rehabilitation programme.

8.10 National Environment Management Authority

NEMA is specifically mandated by the National Environment Act (NEA) Cap. 153 as the principal agency in Uganda charged with the responsibility of coordinating, monitoring, supervising, and regulating all environmental management matters in the country. One of the key institutional mandates of NEMA include among others ensuring the observance of proper safeguards in the planning and execution of all development projects including those already in existence that have or are likely to have significant impact on the environment. The role of NEMA will be to review and approve environmental impact assessments and Project Briefs as well as monitoring records submitted in accordance with the National Environment Act and the respective regulations.

Safeguards Capacity –In general, NEMA is understaffed and constrained mainly due to the limited operational funds and monitoring agricultural activities of smallholder farmers will be a challenge. However, NEMA can monitor the irrigation sub components of the ACDP through its Department of Environment Monitoring and Compliance in addition to the District Environment Officers.

8.11 Climate Change Unit, MoWE

Uganda's National Adaptation Programmes of Action (NAPA) was developed under the leadership of the Department of Meteorology as the UNFCCC National Climate Change Focal Point. The formal objectives of the NAPAs are to provide a process for Least Developed Countries (LDCs) to identify priority activities that respond to their urgent and immediate needs to adapt to climate change – those for which further delay would increase vulnerability and/or costs at a later stage. NAPAs were designed as part of the National Adaptation Plan to Climate Change for Uganda to address specific urgent and immediate problems faced by communities. As one of the NAPAs, **"PROJECT 7**: **Vectors, Pests and Disease Control Project"** aims at understanding the linkages of these outbreaks to climate change for more cost-effective management with special emphasis on vulnerable communities and gender dimensions (GoU, 2007). ***Therefore, the Climate Change Unit will have to implement the NAPA on pests and diseases and inform MAAIF on its findings***.

8.12 The Uganda Revenue Authority (URA)

The Uganda Revenue Authority (URA) is a body corporate established under S.2 of the Uganda Revenue Authority Act, Cap 196. Its main function is to administer and give effect to the laws or the specified provisions of the laws set out in the First Schedule to the Act and to assess, collect, and account for all revenue to which those laws apply.

The Customs Department is one of the departments under the Uganda Revenue Authority which was found to be relevant to pesticides through its mandate. Section 9 of the External Trade Act gives powers to customs officers to refuse to allow:(i) the import of any import restricted goods or any goods the import of which has been limited until an import license is produced and he or she is satisfied that the import of goods in question in no way contravenes any of the conditions of the license; (ii) the export of any export restricted goods or any goods the export of which has been limited until an export license is produced to him or her and he or she is satisfied that the export of the goods in no way contravenes any of the conditions of the license; and (iii) the import or export of any goods whose import or export has been prohibited or if under such provisions the import or export of goods has been made subject to any conditions until he or she is satisfied that the conditions have been fulfilled. ***URA will have to ensure that the fertilizers and pesticides imported to Uganda for the ACDP meet standards as per guidance of the ACB, NDA and UNBS.***

8.13 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:

- Safeguard the health and safety of the consumers and the environment against imported substandard, shoddy and hazardous products;
- Safeguard our industries from cheap counterfeit imports that can be a threat to our infant industries;
- 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.

8.14 Government Analytical Laboratory (GAL)

The GAL is a Department under the Ministry of Internal Affairs and has been in existence since 1930's. It is mandated to safeguard lives of people and environment as well as enhancing market competitiveness of products through provisions of forensic and general scientific services. Currently, the main functions of GAL can be broadly categorized as follows:

- Provision of Forensic science services as back up in assuring national internal security, trans-boundary activities, law and order to all interested parties;

- Statutory testing for enforcement of public health, environmental standards and regulations; and

- Advisory and investigative services, important in assuring national internal security, trans-border activities, business competitiveness, health and environmental protection.

This Pesticides Residue Laboratory was set up under the GAL department by the Government of Uganda as a result of fish poisoning saga in 1997. It was a requirement by the European Union for any fish exporting country to establish and build capacity for a pesticide residue laboratory. PRL is mandated to analyze pesticide residues in water, food and environmental samples for both local consumption and export. It further undertakes the examination of residues of agricultural and veterinary drugs in food and food animals that are of health and public concern. For instance, during fish poisoning as indicated above, the laboratory carried out analysis on the fish samples from the market and identified the poison as endosulfan. ***GAL and other laboratories will be useful in testing of samples to monitor pesticide contamination and food safety issues.***

Government Agencies	**Capacity**
Government Analytical Laboratory (GAL)	• Has capacity (equipment and competent personnel) to test for pesticide contamination.
NEMA Laboratory	• No capacity (limited competent personnel and no required equipment) to analyze pesticide contamination.
Department of Chemistry – MUK	• The department of Chemistry can also analyze pesticide contamination and residues in soils, water and agricultural produce.
Department of Soil Science – MUK	• Department of Soil Science has capacity to analyze pesticide contamination and residues.
The Institute of Public Health – MUK	• Institute of Public Health has capacity for research still in infancy at the other universities.
DWR Lab in Entebbe	• No capacity for pesticides; existing equipment can only test for heavy metals and other organics.
Kawanda National Research Laboratory	• No equipment specifically for pesticide residue analysis but competent personnel in place.
Chemiphar (U) Ltd	• Chemiphar is an accredited laboratory and equipped with the recommended type of equipment that can be used for monitoring of pesticides in the environment and food.

8.15 Uganda Coffee Development Authority (UCDA)

The UCDA was established by the Uganda Coffee Development Authority Act, 1991 under the Ministry of Trade, Industry and Cooperatives (MoTIC) to be the apex body for promoting, overseeing and regulating the coffee sub-sector, including, control of quality and safety. Through a Cabinet decision the line Ministry for UCDA was changed to the Ministry responsible for Agriculture (MAAIF). However, this decision has not been legally effected, as the UCDA Act, 1991 is still not amended. ***UCDA will work together with MAAIF and NARO to ensure that extension services specifically for coffee are adequate and also to promote research as well as distribution of resistant varieties.***

Capacity – UCDA has limited staff to effectively monitor all aspects of coffee under the ACDP. They will have to work closely with NAADS and the respective DAOs.

8.16 The Role of the Contractors

The Role of the Contractor, which will be as per the contract will be accountable for the overall implementation of the mitigation measures and this will be monitored and supervised by the PCU. As such, an ESMP will be prepared for each sub-project involving construction works. In the schedule of works, the Contractor will include all proposed mitigation measures, and the Supervising Engineers will also ensure that, the schedules and monitoring plans are complied with. This will lend a sense of ownership to the Contractor. The Contractor on his part will also be responsible for planning, implementing and reporting on mitigation measures during the execution of the project works. The Contractor will also be required to apply standard quality assurance procedures in full compliance with the NEMA's Approvals.

With respect to the Supervising Consultant, he should have in his team an Environment Specialist who will have overall responsibility of ensuring that, project implementation process complies with NEMA's Approval Conditions as well as contract provisions. The Environmental Specialist shall work closely with MAAIF's PCU in supervising the contractor. In addition, he/she will support the PCU to monitor state of environmental compliance as documented or executed by the Contractor's Environmentalist. The Specialist will also be attending site meetings and providing in-put to the Project Monthly Progress Reports.

Capacity - The Contractors are unknown at this point. However, the selection criteria will include past environmental performance as well as adequacy of contractor's staff to effectively put mitigations in place.

8.17 World Bank

The World Bank will independently review and comment on the safeguards documents on ACDP as well as independently monitor the project's environmental and social performance in relation to the respective safeguards during its implementation process. Once the World Bank clears the ESMF, it will then be officially disclosed on its website. Technical guidance may also be provided by World Bank to MAAIF as needed.

8.18 Local Government Administration Structures

Local governments will coordinate and monitor the implementation of the project in their respective areas of jurisdiction. Project implementation will be spread throughout the Country, specifically covering the following districts: Masaka, Mpigi, Rakai, Iganga, Bugiri, Namutumba, Pallisa, Tororo, Butaleja, Kapchorwa, Bukwo, Mbale, Soroti, Serere, Amuru (including Nwoya), Gulu, Apac (including Kole), Oyam, Lira (including Dokolo), Kabarole, Kamwenge, Kasese, Kyenjojo (including Kyegwegwa), Mubende, Kibaale, Hoima, Masindi, Kiryandongo, Ntungamo, Kabale, Bushenyi, Isingiro, Nebbi, Arua (including Nyadri), and Yumbe. District and Local Council Administration in ACDP Districts will be vital in implementation of the project by mobilizing political goodwill and sensitizing communities on the project as well as their District Environment Officers taking care of environmental aspects of the project at their levels.

In accordance with the Local Government Act, 1997, wetlands management is a decentralized function. The roles of the district local governments with respect to wetlands management and conservation include:

- Coordinating wetland management;
- developing and implementing District Wetland Action Plans as integral parts of the District Development Plans;
- enforcing the laws relating to wetlands;
- monitoring wetlands management and conservation, which includes maintaining and disseminating accurate, up-to-date information on the wetlands in the district in the form of District Wetlands Inventories;
- mobilizing and supporting local communities, resource user groups, local NGOs and CBOs in wetlands management and conservation, including preparation and implementation of Wetlands Management Plans;
- Identifying vital and critical wetlands that need protection, and where required, ensuring the fulfillment of Uganda's obligations under the Ramsar Convention and other international agreements.

Water User Groups and Associations are the lowest form of water management units. They were formed under the Water Act 152 (Section 50-52) and their role is to promote community participation in relation to the planning and management of local point source water supply systems. They operate through Water and Sanitation Committees whose function is to promote sanitation and hygiene and collectively plan and manage local water systems.

Safeguards Capacity – The Local Governments have District Environment Officers, District Agricultural Officers, District Community Development Officers and District Gender Officers, some of whom are involved in the current Bank Financed ATAAS and NUSAF-2 Projects. Sub-county extension staff shall also be involved in the implementation of safeguard policies. The DEOs in the respective areas of project implementation will have to monitor the projects to ensure that mitigation measures are adequate and are well integrated in the subproject proposals. DEOs will also have to review all ACDP environmental and social assessment reports and

provide comments during their review to NEMA before issuance of Approvals. The Role of the DEOs will also be to ensure that ACDP subprojects are implemented in accordance with NEMA conditions of approval. They will also attend the monthly site inspection meetings for the project and be able to point out issues of concerns. The capacity development of the respective District and Sub County staff needs to be strengthened through a hands-on training on safeguard requirements.

8.19 Role of NGOs

The role and commitment of NGOs is significant in all the stages of the pesticides life-cycle right from the importation, use to waste disposal. 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. The Key NGOs include: Uganda National Farmers Federation (UNFFE), Uganda Consumers' Protection Association (UCPA), National Union of Plantation and Agricultural Workers in Uganda (NUPAW), and Uganda Environment Education Foundation (UEEF). ***Under the ACDP, the NGOs working with farmers will:***

- Raise awareness among the smallholder farmers about the dangers of pesticide use;
- Work with extension staff to teach farmers about safe pesticide use and storage;
- 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;
- Empower the smallholders through training and other support to engage with the local government to address their concerns on pesticides use;
- Do more to publicize to the public the environmental and health impacts of pesticide use

8.20 Monitoring and Evaluation

Implementation of the ESMF includes both internal monitoring and reporting and external monitoring and evaluation.

8.20.1 Internal Monitoring and Reporting

At local level, the respective project management teams in the different agencies, local government and local communities will be responsible for monitoring to ensure that all required environmental and social mitigation measures for each project component are being implemented satisfactorily. Information collected from various stakeholders together with observations of project activities will be reported quarterly to MAAIF. Monthly monitoring reports will include:

- List of consultations held, including locations and dates, name of participants and occupations
- Main points arising from consultations including any agreements reached
- A record of grievance applications and/or grievances redress dealt with

- Monitoring data on environmental and safety parameters
- Trainings conducted

At national level, MAAIF will take overall responsibility for overseeing progress in implementing the ESMF and assessing the effectiveness of mitigation measures against agreed indicators and parameters. MAAIF will consolidate and review monthly reports submitted by the different agencies.

8.20.2 External Monitoring and Evaluation

External assessment of compliance with mitigation measures will also be carried out on a regular basis by an external agency/independent party to be appointed by MAAIF and the results communicated to MAAIF and the World Bank. Government agencies and stakeholders will be critical in external monitoring as below:

Agency	**Monitoring Roles**
NEMA	• Implementation of environmental and social mitigations through compliance audits in addition to inspections
MGLSD	• Monitor gender related issues to ensure that vulnerable women, the poor and elderly etc. are compensated equally.
Government Valuer	• Review and approve compensation rates and reports
MWE	• Monitor water contamination through the Directorate of Water Resources Management (DWRM)
WMD	• Monitor the impact of ACDP activities on wetlands in terms of degradation.
UNADA	• Monitor the presence of fake pesticides on the market
MoH	• Monitor environmental health issues such as number of cases of pesticide poisoning occurring under the project
GAL	• Levels of pesticides in water resources
NGOs	• Collect information on farmers' awareness and practices on ground

The Independent Third Party Monitoring Agency will be responsible for the preparation of the semi-annual compliance report on RAPs and ESIA/ESMPs which will (i) update the status of PAPs against the socio-economic baseline of the RAPs, (ii) review how compensation and related resettlement assistance in cash or kind are being delivered to affected households and (iii) ensure ESIA/ESMP measures and commitments are adequately implemented.

The Independent Third Party Monitoring Agency will use the compliance report specifically to assess the status of project- affected vulnerable groups such as female-headed households, landless, disabled/elderly and poor families. The Independent Third Party Monitoring Agency's report will be a valuable tool to ensure that PAPs receive the compensation due to them under the RPF and that mitigation measures including offsets and other compensation program under the ESIA/ESMP are implemented with acceptable results/parameters. The report and any recommendations will be made available to the public. The cost of external Monitoring and Evaluation will be borne by the ACDP.

9 ESMF BUDGET AND DISCLOSURE

9.1 ESMF Budget Components

Financial resources are required to support implementation of the ESMF. Below are estimates to successfully implement the ESMF.

Item	**Cost in USD**				
	Year 1	Year 2	Year 3	Year 4	Year 5
Mobilization and training in ESMF Safeguards requirement and general project management including GRM issues coordination (targeted include implementing agencies and LGs)	120,000	80,000	40,000	40,000	40,000
Facilitation to NGOs and CBOs to create awareness about safe pesticide handling and use	100,000	60,000	60,000	40,000	40,000
Projects supervision (civil works, health and safety, HIV issues etc.)	120,000	80,000	40,000	40,000	40,000
Preparation of Community Based Wetland Management Plans	150,000				
Demarcation of wetlands	200,000				
Facilitation of LGs to mobilize farmers and to create awareness	120,000	80,000	40,000	40,000	40,000
Facilitation of Water User Associations	80,000	60,000	40,000	20,000	20,000
Independent Third party monitoring	50,000	50,000	50,000	50,000	50,000
Annual Total	**940,000**	**410,000**	**270,000**	**230,000**	**230,000**
Total Budget Estimate for ESMF Implementation	**2,080,000**				

9.2 ESMF Disclosure

This ESMF will be disclosed in compliance with relevant Ugandan regulations and the World Bank Operational Policies. It will be disclosed at the Info shop of the World Bank and will also be available to any interested persons. MAAIF will also provide copies of the respective ESIAs and RAPs or disclosure at the World Bank Info shop for public access and for public information and comments/feedback, if any.

10 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

The objective of the proposed Agriculture Cluster Development Project is to raise productivity, production, and commercialization of selected agricultural commodities in specified clusters of districts across the country. This will raise farm and agribusiness incomes while substantially lowering transactions costs in markets for agricultural commodities. Special attention will be given to raising productivity and marketed production on small-scale farming operations in the project clusters. Special attention will also be given to proactively ensure inclusion within project activities of farming households (and agribusiness firms) in which women and youth play a prominent role in the management of the farm (and/or agribusiness) enterprise. Five focus commodities (maize, beans, rice, cassava and coffee) have been selected according to the priorities articulated in the operationalization framework for the non-ATAAS components of the DSIP.

This project will have several positive social impacts for people. ACDP is expected to have significant positive impact on social and poverty conditions by increasing productivity and production the selected commodities as well as focusing to reach and promote smallholding farmers. It will bring needed support to Water Users' Groups so that they can better organize water management and maintenance of catchments to ensure irrigation sustainability. The process has been designed to ensure the inclusion of women and youth in the management of farms (and/or agribusiness) enterprises. Affirmative actions to include youth and women in activities will include, but not limited to training, financial access, land access and use (on the irrigation schemes), and access to inputs.

The ACDP Project has been assigned Environmental Category B.Some of the associated negative environmental and social impacts include water abstraction on downstream users, loss of wetland habitat as a result of the irrigation infrastructure needed, point and non-point pollution of water sources, soil erosion and siltation, water and land-use related conflicts. Most of these impacts are minor or of low-intensity, site-specific and thus relatively straight forward to manage, with participation of the Local Governments and WUAs. Infrastructures like dams will not be considered as they could lead to flooding properties, settlement and affect biodiversity ecosystems.

10.2 Recommendations

10.2.1 Need for an Environmental Liaison Unit in MAAIF

MAAIF does not have a unit dedicated to overseeing environmental issues in the sector. This is of importance bearing in mind the nature of the sector's activities on the environment and a number of on-going interventions on agriculture which have varying impacts on the environment. As a long term measure, MAAIF should establish an Environmental Liaison Unit (ELU) within its public service macro-structure whose mandate should be to mainstream environmental and social measures into the Ministry's plan, activities, policies and programmes. The continued use of technical assistance by way of Environmental Consultants is not sustainable in the long run.

10.2.2 Need for Planning in the use of wetland areas for the project

Wetland areas have a rich biological diversity of birds, primates, and other flora and fauna. Wetlands are important breeding grounds for some species of fish and birds. Of specific importance is the crested crane which is a national emblem of Uganda – that breeds exclusively in wetlands, which are now threatened with rampant reclamation. Studies predict that if the current trend of wetland loss continues, it is feared that no Crested Cranes will breed successfully in the country within the next half a century. It is important, therefore, that wetlands be given due conservation attention to support the survival of its national emblem. Therefore, there is need for careful planning in the use of wetland areas for ACDP irrigation so as to maintain sections of wetland areas for ecological purposes such as breeding grounds for both fish and birds.

10.2.3 Develop, update and implement CWMP

It is much easier to implement a project of ACDP's nature of design in an area that has a Community based Wetland Management Plan for political and stakeholder considerations. The Consultant therefore recommends that the project embarks on an exercise to formulate management plans and update those others where they exist for a smooth implementation in wetland areas to avert possible backlashes with communities on the use of wetlands.

10.2.4 Demarcate wetland boundaries and create buffer zones

The survey discovered that wetland boundaries have never been marked out in most of the areas visited and there was confusion on where community land ends or where the wetland starts. This looked more of a weakness currently exploited by wetland resource users to encroach on wetlands. With the support of the Local Government, the ACDP implementation needs to initiate efforts targeting the demarcation of wetland boundaries from community and individual land. Once the process of demarcating boundaries is on course, then buffers zones can be put in place as a measure to reinforce the 'respect' for those boundaries.

10.2.5 Integration of Climate Change Adaptation Measures in ACDP

Available information indicates that, Uganda's climate variability has already pronounced impacts on agriculture in general and on ACDP target crops in particular. It is recommended that MAAIF mainstreams adaptation measures to counter climatic variability in its various plans and activities.

10.2.6 Integration of sustainability measures into ACDP Planning

Need to integrate measures to ensure sustainability after the closure of interventions in ACDP is highly recommended. During consultations, it emerged that, in many instances, once financing of rice schemes come to an end (case for Olweny Rice Scheme), Government seems not to have clear and sustainable plans for the takeover of such infrastructures and at the end of it, communities simply vandalize the scheme and eventually abuse the wetland. In view of this, it is proposed that, the ESIAs on rice schemes in wetlands under the project should spell out clear project exit strategies as well as, propose comprehensive Decommissioning plans for the schemes.

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12 ANNEXES

12.1 Annex 1: Environmental and Social Screening Form

Please type or print clearly, completing this form in its entirety. You may provide additional information on a separate sheet of paper if necessary. Kindly note that the information you are to provide is required by Section 22 of the National Environment Act Cap 153.

Component under ACDP	
Name of Subproject	
Project Objective	
Expected Commencement Date	
Proposed Main Project Activities	
Location (District, Parish, Village)	
Name of Evaluator	

BRIEF DESCRIPTION OF THE PROPOSED PROJECT

EMPLOYEES AND LABOURERS

Number of people to be employed: Employees and Labourers	During Construction	During Routine Operation
FULL-TIME		
PART-TIME		

DESCRIPTION OF PROCESS THAT COULD BE IMPLEMENTED

Briefly describe the type and nature or type of the project at the site.

List the type and quantity of raw materials to be used in the project and highlight their sources

Material	**Quantity**	**Source**

POTENTIAL ENVIRONMENTAL IMPACTS

Please indicate environmental impacts that may occur as a result of the proposed project.

A. The Biological Environment

The Natural Environment

Describe the habitats and flora and fauna in the project area and in the entire area expected to be affected by the sub-project (e.g., downstream areas, access roads):

_____

Will the project directly or indirectly affect:
Natural forest types?

swamps?

Wetlands (i.e., lakes, rivers, swamps, seasonally inundated areas)?

Natural critical habitats (parks, protected areas)?

Other habitats of threatened species that require protection under Ugandan laws and/or international agreements?
YES _____ NO _____

Are there according to background research/observations any threatened/ endemic species in the project area that could be affected by the project?
YES _____ NO _____

Will vegetation be cleared? If yes, please state the distance/length of affected area
YES _____ NO _____

Will there be any potential risk of habitat fragmentation due to the clearing activities?
YES _____ NO _____

Will the project lead to a change in access, leading to an increase in the risk of depleting biodiversity resources?
YES _____ NO _____

Provide an additional description for "yes" answers:
_____

Protected Areas
Does the subproject area or do subproject activities:

Occur within or adjacent to any designated protected areas?
YES _____ NO _____

Affect any protected area downstream of the project?
YES _____ NO _____

Affect any ecological corridors used by migratory or nomadic species located between any protected areas or between important natural habitats (protected or not) (e.g., mammals or birds)?

YES _____ NO _____

Provide an additional description for "yes" answers:
_____

Invasive Species
Is the sub-project likely to result in the dispersion of or increase in the population of invasive plants or animals (e.g., along distribution lines)?
YES _____ NO _____

Provide an additional description for a "yes" answer:
_____

B. The Physical Environment
Geology/Soils

Will slope or soil stability be affected by the project? YES _____ NO _____
Will the subproject cause physical changes in the project area (e.g., changes to the topography)? YES _____ NO _____

Will local resources, such as rocks, wood, sand, gravel be used?
YES ____ NO ____
Could the subproject potentially cause an increase in soil salinity in or downstream the project area? YES _____ NO _____

Could the soil exposed due to the project potentially lead to an increase in lixiviation of metals, clay sediments, or organic materials? YES _____ NO _____
_____
Landscape / Aesthetics

Is there a possibility that the sub-project will adversely affect the aesthetics of the landscape?
YES _____ NO ____
_____
Pollution
Will the sub-project use or store dangerous substances (e.g., large quantities of hydrocarbons)?
YES _____ NO _____

Will the subproject produce harmful substances? YES _____ NO _____
Will the subproject produce solid or liquid wastes? YES _____ NO _____
Will the subproject cause air pollution? YES _____ NO _____
Will the subproject generate noise? YES _____ NO _____
Will the subproject generate electromagnetic emissions? YES ____ NO _____
Will the subproject release pollutants into the environment? YES ____ NO ____
_____

C. The Social Environment

Land Use, Resettlement, and/or Land Acquisition
Describe existing land uses on and around the sub-project area (e.g., community facilities, agriculture, tourism, private property, or hunting areas):
_____
Are there any land use plans on or near the sub-project location, which will be negatively affected by subproject implementation? YES ____ NO ____

Are there any areas on or near the subproject location, which are densely populated which could be affected by the sub-project? YES _____ NO _____

Are there sensitive land uses near the project area (e.g., hospitals, schools)?
YES ____ NO____

Will there be a loss of livelihoods among the population? YES ____ NO ____

Will the sub-project affect any resources that local people take from the natural environment? YES _____ NO _____

Will there be additional demands on local water supplies or other local resources?
YES _____ NO _____

Will the sub-project restrict people's access to land or natural resources?
YES ____ NO ____

Will the project require resettlement and/or compensation of any residents, including squatters?
YES _____ NO _____

Will the subproject result in construction workers or other people moving into or having access to the area (for a long time period and in large numbers compared to permanent residents)?
YES ____ NO _____

Who is/are the present owner(s)/users of resources/infrastructures the subproject area?
_____

Loss of Crops, Fruit Trees, and Household Infrastructure
Will the subproject result in the permanent or temporary loss of:
Crops?
Fruit trees / coconut palms?
Household infrastructure?
Any other assets/resources?

Occupational Health and Safety, Health, Welfare, Employment, and Gender
Is the sub-project likely to safeguard worker's health and safety and public safety (e.g., occupational health and safety issues)? YES _____ NO _____

How will the project minimize risk of HIV/Aids?

How will the sub-project minimize the risk of accidents? How will accidents be managed, when they do occur?

_____

Is the project likely to provide local employment opportunities, including employment opportunities for women? YES _____ NO _____

Provide an additional description for "yes" answers:

_____

Historical, Archaeological, or Cultural Heritage Sites

Based on available sources, consultation with local authorities, local knowledge and/or observations, could the sub-project alter:

Historical heritage site(s) or require excavation near the same? YES ____ NO _____

Archaeological heritage site(s) or require excavation near the same? YES ____ NO ____
Cultural heritage site(s) or require excavation near the same? YES _____ NO ____

Graves, or sacred locations (e.g., fetish trees or stones) or require excavations near the same? YES _____ NO _____

N.B For all affirmative answers (YES) Provide description, possible alternatives reviewed and/or appropriate mitigating measures.

RECOMMENDATIONS

Environmental category: (tick where applicable)

	Category	**Justification**
	Does not require further environmental or social studies	
	Requires submission of only a Project Brief	
	Requires a full ESIA to be submitted on date	
	Requires an ESMP to be submitted on date	
	Requires a RAP to be submitted on date	
	Requires an Indigenous Peoples Plan (IPP)	
	Requires a Physical Cultural Resources Plan	

CERTIFICATION

We certify that we have thoroughly examined all the potential adverse effects of this subproject.
Reviewer: ……
Name: ……..
Signature: …….
Date: …….

12.2 Annex 2: Environmental and Social Checklist Form

a) Irrigation Projects

Issues	Mitigation Measures
Natural Habitat Disturbance	• Strengthening local authorities and conservation personnel responsible for managing natural resources • Public Awareness Programme • Agricultural extension programmes • Provision for energy (kerosene subsidies and wood fuel lots as required during the construction period) • Avoidance of significant areas during pre-construction and construction phases • Downstream flow releases to maintain aquatic habitats
Water and soil quality	• Minimum bypass flows • Measures to reduce organic and inorganic waste runoff into water systems • Appropriate material handling, storage and disposal systems • Appropriate disposal of waste materials • Establish appropriately designed landfill sites • Restrictions on blasting • Appropriate locations for handling, storing and disposing of oil products and other harmful chemicals • Limited use of pesticides
Erosion and sedimentation	• Appropriate drainage, erosion prevention and modified construction techniques during the construction period • Site revegetation programme • Installation of settlement ponds and sediment traps
Impacts on Landscape	• Considerations of aesthetic and cultural values in design of project features • Revegetation programme
Loss of Cultural Property	• Consultations with local leaders and spiritual leaders to identify important sites and avoidance of important site disturbance • Provisions for relocation of important cultural sites • Funds for conducting necessary rituals and ceremonies related to beliefs
Involuntary Resettlement	• Avoid siting infrastructure where people will be disturbed and where resettlement could be an issue • Consultations with affected persons • Prepare and implement resettlement plan and alternatives for affected persons • Cash compensation based on District assessment rates for loss of up to 25% of property or production • Relocation support and livelihood development plan for those affected by more than 25% of property or production • Affected peoples given opportunity to identify potential settlement areas • Host communities brought into the planning process for resettlement • Strengthening of local authorities and line agencies responsible for carrying out resettlement and agricultural extension and possible involvement of local NGOs
Health and safety	• Strengthening existing health facilities – perhaps with the active involvement of NGOs as support • Health awareness programmes – hygiene, malaria and other water-borne diseases and STDs • Supervision of health facilities and worker safety measures during construction period • Provisions to ensure safe drinking water • Ensure effective sewage treatment and properly designed and managed camps to avoid insect and mammal disease carriers • Ensure safety training for workers, safety equipment for workers, and provide safe work conditions and safety management and inspections

International Agreements	• Review of all relevant international agreements as required for projects
Dam Safety	• Independent review of dam design and safety

The following should in addition be considered in undertaking small scale irrigation activities. Depending on the scope of the sub-project, technical advice or assistance on the following should be sought to ensure sustainability of irrigation projects:

a. Obtain information concerning:

1. Water quality and hydrology, including depth of the water table;
2. Rainfall data for the area (when and how much);
3. The area to be irrigated (dimensions and topography);
4. Soil types and pH;
5. Percolation (the rate at which water is absorbed and travels through the soil);
6. The capacity of the soil to retain water;
7. The amount of water needed by crops; and
8. The amount of evaporation which will take place.

b. To build in soil conservation measures, take the following steps:
1. To reduce evaporation and seepage, keep canals narrow and deep, and cover canals and pipes where necessary;
2. To slow runoff, use appropriate techniques such as terracing, contour ploughing, and mulching;
3. To improve soil and water retention, replant trees and vegetation of the watershed;
4. Select crops appropriate for soil, water, and climate conditions; and
5. Reach agreement on water use rates to avoid overuse.

c. To build a drainage system to prevent waterlogged or "salty" soils and to ensure good crops, ascertain the following:
1. depth of crop roots;
2. land contours;
3. rate of absorption and percolation of soil;
4. the presence of hard or laterite soil layers that can prevent good drainage;
5. Existing natural drainage patterns on/below the surface, natural water table depth during the wet season.

d. When using ground water for irrigation purposes, ascertain whether this will lead to a lowering of the water table which could affect:
1. other dug and drilled community wells in the area;
2. the survival of crops and natural vegetation;
3. The volume of water in streams, rivers, lakes, and wetlands.

e. If a project involves diverting streams or rivers, ascertain whether the reduced water flow in the stream or river could:
1. reduce food sources and habitat for aquatic life;
2. reduce food sources or impact livelihood activities for people downstream;

3. Prevent or reduce the use of water for irrigation, drinking, livestock etc. downstream.

f. When using fertilizers, consider potential impacts on
1. local water resources or downstream;
2. aquatic life

g. Other irrigation considerations:
1. Community participation in planning, construction, monitoring, water allocation, operation and maintenance;
2. Possible flood and drought cycles;
3. Ensure that water quality is appropriate for irrigation purposes;
4. Upstream activities (i.e. factories, other irrigation, forestry) that could affect water quantity and quality in the project area;
5. Consider local low-cost alternatives to chemical fertilizers and pesticides.

Environmental Impacts and Mitigations of Road Maintenance

Activity	**Impact**	**Mitigation Measures**
Manual road maintenance	• Creation of employment opportunities • Increase in household incomes • Sense of ownership of the road Prompt road maintenance • Reduction in vandalism of road structure • Development of construction skills	• Give preference to local communities in awarding road maintenance labor based contracts
Ditch Cleaning	• Flooding of agricultural lands and homesteads due to modification of points or direction of discourage of ditches	• Form offshoots to spit flow in the drain. Construct infiltration ditches, soak pits to prevent water being discharged towards agricultural lands and homesteads
Culvert repairs/replacement	• Disruption of traffic • Increase in turbidity of water due to excavated materials being washed into the affected stream	• Erect road warning signs and advice road users to use alternative roads • Excavated materials should be suitably stockpiled and covered so that they will not be washed into water sources
Remix pothole patching	• Littering of the landscape due to the disposal of materials excavated from potholes to be repaired • Loss of vegetation through extraction of firewood for heating bitumen • Traffic accidents due to potholes left open overnight • Accidents due to disruption of traffic flows by road works	• Excavated materials should be used for backfilling borrow and gravel pits • Firewood for heating the bitumen should be obtained from sites approved by the forest department and local communities • Excavated potholes should be covered with crushed stones and sand if they are going to be left open overnight • Erect road signs warning road users about ongoing road maintenance works
Medium and light	• Disruption of traffic flows • Increased pressure on water	• Warn the public about planned and on-going road works and advise an

grading	sources used by the community	alternative route to avoid delays due to road works • Water for road maintenance should be obtained from sources which do not affect water supply to communities
Heavy grading, re-gravelling and spot gravelling	• Reduced land use option on sites where borrow pits will be located • Loss of land values on properties on which borrow pits will be located • Gulley formation through collapsing offside walls or borrow pits • Breeding of disease causing vectors in stagnant water collecting in borrow pits • Dust during transportation of field materials • Noise due to haulage trucks • Delays in traffic due to detours and diversions • Objectionable vision intrusion of gravel pits particularly on prominent relief features • Disruption of traffic flows • Increased pressure on water sources used by the communities	• Compensate adequately owners of properties affected • Rehabilitate borrow pits by backfilling or reducing slopes of side walls • Backfill borrow pits if possible • Watering of roads to reduce dust and covering materials to be transported • Erect transport calming measure near settlements sensitive to noise e.g. schools, hospitals • Warn road users about road works and suggest alternative road routes to avoid traffic delays. Ensure road maintenance works are completed promptly • Gravel pits should be located on prominent relief features. If unavoidable, they should be rehabilitated by backfilling and re-vegetating them • Fence gravel pits and provide only limited access to them • Reduce slopes of pits. Ideally backfill and re-vegetate pits • Warn the public about planned and ongoing road works and advise on alternative routes to avoid delays due to the road works • Water for road maintenance work should be obtained from sources which do not affect the water supply to communities

12.3 Annex 3: Third Schedule of the National Environmental Act, Cap 153

Projects to be considered for environmental impact assessment:

1. General -
(a) an activity out of character with its surroundings;
(b) any structure of a scale not in keeping with its surroundings;
(c) major changes in land use.

2. Urban development, including -
(a) designation of new townships;
(b) establishment of industrial estates;
(c) establishment or expansion of recreational areas;
(d) establishment or expansion of recreational townships in mountain areas, national parks and game reserves;
(e) shopping centers and complexes,

3. Transportation, including -
(a) all major roads;
(b) all roads in scenic, wooded or mountainous areas;
(c) railway lines;
(d) airports and airfields;
(e) pipelines;
(f) water transport.

4. Dams, rivers and water resources, including -
(a) storage dams, barrages and weirs;
(b) river diversions and water transfers between catchments;
(c) flood-control schemes;
(d) drilling for the purpose of utilizing ground water resources, including geothermal energy.

5. Aerial spraying.

6. Mining, including quarrying and open-cast extraction of-
(a) precious metals;
(b) diamonds;
(c) metalliferous ores;
(d) coal;
(e) phosphates;
(f) limestone and dolomite;
(g) stone and slate;
(h) aggregates, sand and gravel; and clay;
(j) exploration for the production of petroleum in any form.

7. Forestry-related activities, including -
(a) timber harvesting;
(b) clearance of forest areas;
(c) reforestation and afforestation,

8. Agriculture, including -
(a) large-scale agriculture;
(b) use of new pesticides;
(c) introduction of new crops and animals;
(d) use of fertilizers.

9. Processing and manufacturing industries, including -
(a) mineral processing, reduction of ores and minerals;
(b) smelting and refining of ores and minerals;
(c) foundries;
(d) brick and earthenware manufacture;
(e) cement works and lime processing;
(f) glass works;
(g) fertilizer manufacturing or processing;
(h) explosives plants;
(i) oil refineries and petrochemical works;
(j) tanning and dressing of hides and skins;
(k) abattoirs and meat-processing plants;
(l) chemical works and process plants;
(m) brewing and malting;
(n) bulk grain processing plants;
(o) fish processing plants;
(p) pulp and paper mills;
(q) food processing plants;
(r) plants for the manufacture or assembly of motor vehicles;
(s) plants for the construction or repair of aircraft or railway equipment;
(t) plants for the manufacturing or processing of rubber;
(u) plants for the manufacturing of tanks, reservoirs and sheet-metal containers;
(v) plants for the manufacturing of coal briquettes.

10. Electrical infrastructure, including -
(a) electricity generation stations;
(b) electrical transmission lines;
(c) electrical substations;
(d) pumped-storage schemes.

11. Management of hydrocarbons, including the storage of natural gas and combustible or explosive fuels.

12. Waste disposal, including -
(a) sites for solid waste disposal;
(b) sites for hazardous waste disposal;
(c) sewage disposal works;
(d) major atmospheric emissions;
(e) offensive odors.

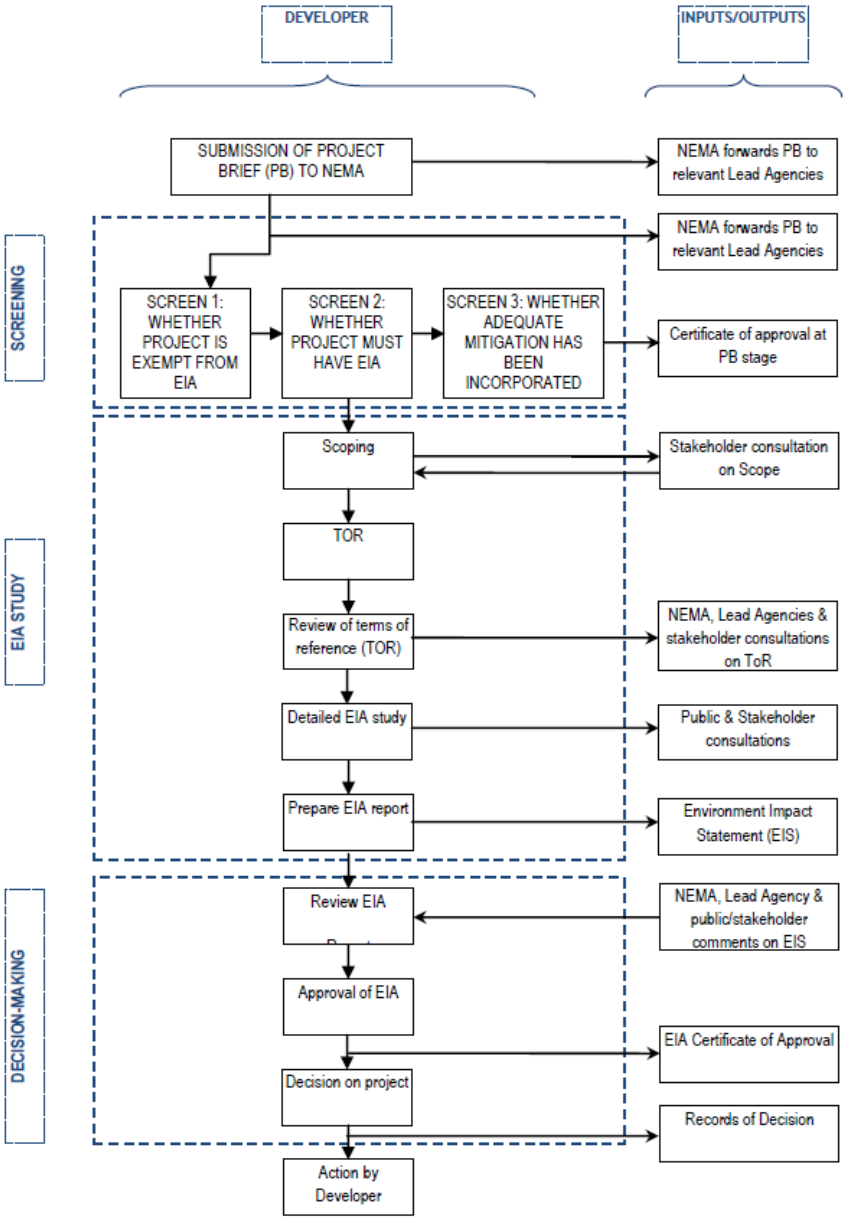
13. Natural conservation areas, including -
(a) creation of national parks, game reserves and buffer zones;

(b) establishment of wilderness areas;
(c) formulation or modification of forest management policies;
(d) formulation or modification of water catchment management policies;
(e) policies for management of ecosystems, especially by use of fire;
(f) commercial exploitation of natural fauna and flora;
(g) introduction of alien species of fauna and flora into ecosystems.

12.4 Annex 4: Detailed ESIA Process in Uganda

Overview

The ESIA guidelines (NEMA 1997) and the ESIA regulations (NEMA 1998) recognize the following stages in an ESIA process: Project Brief formulation; Screening; Environmental impacts study; and Decision making. In addition public consultation is required throughout the ESIA process.



(Source: EIA Guidelines for Uganda 1997)

The EIA process in Uganda is described is initiated by the submission of a project brief – a document that contains the same sorts of information that are in the ESSF and a format for which

is contained in the EIA guidelines. Once the information is judged to be complete, NEMA requests comments from the lead agency and then screens the project. The Executive Director has three options: (a) approve the proposed project, if the EIA is not mandatory and the project brief includes adequate mitigation measures, or (b) request the developer to prepare an Environmental and Social Impact Study (ESIS) if a decision cannot be made on the basis of the project brief. If MAAIF has ascertained that the project is on the mandatory ESIA list, NEMA state that the project brief stage is normally omitted, moving straight into the ESIA process. If the decision is for an ESIS, the proponent obtains NEMA approval of the proposed ESIA consultant, conducts a scoping exercise, and agrees with NEMA on the study terms of reference. The study is conducted, and culminates in submission of an Environmental Impact Statement (ESIS) to NEMA for review and decision. Stakeholder consultation is mandatory at scoping, Terms of Reference preparation, during the environmental study, and preparation of the draft Environmental and Social Impact Statement (ESIS). The content of an ESIS, as specified in the EIA regulations, covers the recognized elements of environmental and social assessment good practice, including consideration of technical and site alternatives and induced and cumulative impacts.

The EIA Regulations (First Schedule) list the issues to be considered in an EIA, including:

- Biodiversity
- Ecosystem maintenance
- Fragile ecosystems
- Social considerations including employment generation, social cohesion or disruption, immigration or emigration, local economy
- Effects on culture and objects of cultural value
- Visual impacts

Preparation of Project Brief

According to the National Environment Act, "project brief" means a summary statement of the likely environmental effects of a proposed development referred to in section 19 of the Act. Unlike the ESIA, a project brief does not require a scoping report and neither submission of terms of reference for approval by NEMA. According to Regulation 5 of the ESIA Regulations, 2006, a Project Brief is supposed to contain the following:

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

If the Executive Director is satisfied that the project will have no significant impact on the environment, or that the Project Brief discloses sufficient mitigation measures to cope with the anticipated impacts he may approve project. The Executive Director of NEMA or his delegated official shall then issue a Certificate of Approval for the project. However, if the Executive Director finds that the project will have significant impacts o the environment and that, the Project Brief does not disclose sufficient mitigation measures to cope with the anticipated negative impacts, he shall require that, the developer undertakes an ESIA for the planned project.

Environmental Screening

The purpose of screening is to assist categorize the type of ESIA required for the project i.e. does it require a full ESIA, a Project Brief or no ESIA at all is required. This is important to enable the application of the appropriate ESIA level based on the project's anticipated levels of significant impacts as elaborated in the National Environment (EIA) Guidelines 1997.

Scoping and Preparation of ToRs

Scoping is the initial step in the ESIA process. Its purpose is to determine the scope of work to be undertaken in assessing the environmental impacts of the proposed project. It identifies the critical environmental impacts of the project for which in-depth studies are required, and elimination of the insignificant ones. The scoping exercise should involve all the project stakeholders so that consensus is reached on what to include or exclude from the scope of work. It is also at this stage that project alternatives are identified and taken into consideration. The contents of the scoping report are the same as the project brief; however, more detail is likely to be needed. This may involve some preliminary data collection and fieldwork. The Developer takes the responsibility for scoping and prepares the scoping report after consultation with NEMA, Lead Agencies and other stakeholders. The developer with assistance from technical consultants will draw up the ToRs for the ESIS and submit a copy to NEMA that shall in turn be forwarded to Lead Agencies for comments, in this case including the District Environment Officer.

Preparation of the ESIS

In preparing an ESIS, relevant information is collected on issues of real significance and sensitivity. These are then analyzed, mitigation measures developed for the adverse impacts and compensatory measures recommended for unmitigated environmental impacts. Measures aimed at enhancing beneficial or positive impacts are also given. An ESIS documents the findings and is submitted to NEMA by the developer.

Review of ESIS and Decision on Project

The Developer is required to submit ten (10) copies of the ESIS to NEMA for review and approval. NEMA then forwards a copy to the Lead Agencies for comments. NEMA in consultation with the Lead Agencies shall review the contents of the ESIS, paying particular attention to the identified environmental impacts and their mitigation measures, as well as the level of consultation and involvement of the affected stakeholders in the ESIS process. In this review, the level to which the ToRs set out for the study is addressed shall be considered. In making a decision about the adequacy of the ESIS, NEMA shall take into account the comments and observations made by the Lead Agencies, other stakeholders and the general public. NEMA may grant permission for the project with or without conditions, or refuse permission. If the project is approved, the Developer will be issued a Certificate of Approval.

Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) is intended to ensure efficient management of environmental and social issues in subprojects. The ESMP consists of:

- The relevant project activities,
- The potential negative environmental and social impacts,
- The proposed mitigating measures,
- The institutions responsible for implementing the mitigation measures,
- The institutions responsible for monitoring the implementation of the mitigation measures and the frequency of the afore-mentioned measures;
- Capacity building needs and
- The cost estimates for these activities.

In cases where ACDP are likely to have sub-projects which are small in nature without significant environmental impacts, an ESMP will be prepared and will outline specific actions to mitigate these impacts and conforming to the obligations stipulated in the screening exercises, the environmental checklists and all legal instruments in force. At the time of the implementation of the sub-projects, the potential environmental and social impacts must be clearly identified and a management plan formulated, implemented and the plan's performance monitored during and after execution of sub-project activities. The impacts must be avoided or neutralized where possible or mitigated in conformity with Uganda's and the World Bank's prescriptions for sound environmental management.

Environmental Management and Monitoring Plan

Monitoring is the continuous and systematic collection of data in order to assess whether the environmental objectives of the project have been achieved. Good practice demands that procedures for monitoring the environmental performance of proposed projects are incorporated in the ESIS. Monitoring provides information on the occurrence of impacts. It helps identify how well mitigation measures are working, and where better mitigation may be needed. The monitoring program should identify what information will be collected, how, where and how often. It should also indicate at what level of effect there will be a need for further mitigation. How environmental impacts are monitored is discussed below.

- Responsibilities in terms of the people, groups, or organizations that will carry out the monitoring activities be defined, as well as to whom they report amongst others. In some instances, there may be a need to train people to carry out these responsibilities, and to provide them with equipment and supplies;
- Implementation Schedule, covers the timing, frequency and duration of monitoring are specified in an implementation schedule, and linked to the overall sub project schedule;
- Cost Estimates and Source of resources for monitoring need to be specified in the monitoring plan;
- Monitoring methods need to be as simple as possible, consistent with collecting useful information, so that the sub project implementer can apply them.
- The data collected during monitoring is analyzed with the aim of:

- Assessing any changes in baseline conditions;
- Assessing whether recommended mitigation measures have been successfully implemented;
- Determining reasons for unsuccessful mitigation;
- Developing and recommending alternative mitigation measures or plans to replace unsatisfactory ones; and
- Identifying and explaining trends in environment improvement or degradation.

Public Consultation

The environmental impacts or effects of a project will often differ depending on the area in which it is located. Such impacts may directly or indirectly affect different categories of social groups, agencies, communities and individuals. These are collectively referred to as project stakeholders or the public. It is crucial that during the ESIA process, appropriate mechanisms for ensuring the fullest participation and involvement of the public are taken by the developer in order to minimize social and environmental impacts and enhance stakeholder acceptance. An effective consultation process should generally ensure that:

- The public has a clear understanding of the proposed project; and
- Feedback mechanisms are clearly laid out and known by parties involved.

Different stages of the ESIA process require different levels of public consultation and involvement. The key stages are:

- Public consultation before the commissioning of the ESIS;
- Public consultation during the ESIS; and
- Public consultation during ESIS review.

Consultation can be before, during the ESIA study or during its review as outlined below:

Consultation before the ESIA

On submission of the project brief to NEMA, it might be decided that views of the public on the project are sought. NEMA is obliged to publish the developer's notification and other relevant documents in a public notice within 4 weeks from the date of submission of the project brief and/or notice of intent to develop. It is important therefore, that a plan for stakeholder involvement is prepared before the ESIS begins. Such a plan should consider:

- The stakeholders to be involved;
- Matching of stakeholders with approaches and techniques of involvement;
- Traditional authority structures and political decision-making processes;
- approaches and techniques for stakeholder involvement;
- Mechanisms to collect, synthesize, analyze and, most importantly, present the results;
- To the ESIS team and key decision-makers;
- Measures to ensure timely and adequate feedback to the stakeholders; and
- Budgetary/time opportunities and constraints.

Pubic consultation during the ESIS

During the ESIS, the study team should endeavor to consult the public on environmental concerns and any other issues pertaining to the project. Though consultations are very critical at the scoping stage, ideally, it should be an on-going activity throughout the study. During the ESIS review, the public is given additional opportunity for ensuring that their views and concerns have been adequately addressed in the ESIS. Any earlier omissions or oversight about the project effects can be raised at this stage. To achieve this objective, the ESIS and related documents become public after submission to NEMA. An official review appointment will be announced, where the reviewing authority has to answer questions and remarks from the public. These questions have to be handed in writing prior to the meeting.

12.5 Annex 5: Projects which are likely to be exempted from EIA Process (List A, Annex 2 EIA Guidelines)

The following list identifies those projects which are normally exempt from the EIA process. The characteristics and anticipated physical effects of each project should be carefully considered when or if they are exempted from further steps of the EIA Process.

- Clearing and farm construction for individual subsistence small farms.
- Construction or repair of individual houses.
- Minor land use changes in areas with slopes less than 20% including housing construction.
- Information collection (scientific or educational) except if it involves use of chemicals or endangered species or alien materials.
- Transfer of ownership of land or related facilities so long as the general character of the area is not changed.
- Environmental enforcement actions.
- Emergency repairs to facilities within the character of its surroundings.

12.6 Annex 6: Generic Summary of the Environmental and Social Management Plan for ACDP

Project Component	Project Activities	Project Impacts	Mitigation Measures	Project Phase	Surveillance		Mitigation Cost (USD)
					Responsible Entity	Frequency	
Component 01: Community Access Roads Rehabilitation works	• Site clearance and vegetation cutting; • Opening of borrow areas; • Transportation of construction materials.	• Loss of roadside vegetation; • Siltation of water bodies; • OHS issues may arise;	• Compensation for borrow areas; • Restoration of borrow areas; • Provision of PPEs to workers.	Construction phase	Supervising Consultants/DEO/MAAIF	Monthly	Costs will be in works contract for the project
Component 01: Irrigation Infrastructures	• Vegetation clearance • Clearing channels • De-silting of channels • Contamination of water in rice field areas.	• Soils erosion from loose soils; • Loss of vegetation from site clearance; • Management of construction waste at end of the project works; • OSH concerns from working on de-silting works; • May trigger some impacts on physical cultural resources such as graves amongst others; and • Complaints over compensation for borrow and dump sites for cut to spoil materials.	• A Resettlement Policy Framework is in place to guide land uptake issues; • Vegetation planting on the embankments; • Securing dump sites for disposal of cut to spoil materials; • Site restoration and clean up at the end of the project.	Construction Operational	MAAIF/DEOs/Supervising Consultants	Monthly	All the costs for mitigation measures to be embedded under project costs
Component 2: Agriculture inputs	• Purchase, transportation and distribution of agricultural inputs	• Pollution from agro chemicals, • Occupational Health and Safety	• Operationalization of PMP prepared alongside this ESMF	Implementation	MAAIF	Monthly	Budgeted under PMP document
	• Rehabilitation and general infrastructure improvements and construction.	• Issues of OHS amongst workers and the general public in the vicinity; • Management of construction waste; • Siltation from loose	• Provide PPEs to the workforce; • Hording of the site to protect the public from construction debris;	Implementation phase	MAAIF	Monthly	Works construct

Project Component	Project Activities	Project Impacts	Mitigation Measures	Project Phase	Surveillance		Mitigation Cost (USD)
					Responsible Entity	Frequency	
		construction materials; • Thefts and vandalism on structures.					

Pest Management and Monitoring Plan

Potential Impacts and Risks	Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility
Threat from other crop pests and diseases	Educate and train farmers to adopt good agricultural practices (GAP)	Adoption of IPM techniques/ approaches	Farmers trained in IPM techniques and GAP	1. Number of farmers trained, Training records 2. Incidence of crop pests 3. Production losses from crop pests	UCDA, NAADS, MAAIF
	Apply ACB approved or recommended pesticide if necessary	Inspection of pesticides at farm/storage gate prior to use (Project Policy)	Applied pesticides registered and approved by key stakeholders and in conformity with IPM principles	Records of pesticides applied at each farm	UCDA, MAAIF, NAADS
Impact on post harvest losses due to pests	1. Provide adequate and proper storage facilities	Post-harvest loss reduction plan based on IPM techniques in place	a.) Post harvest losses avoided or minimized b) Applied pesticides registered and approved by key stakeholders and in conformity with IPM principles	Number of farmers trained in IPM techniques for post harvest storage; Number and condition of storage facilities in use	MAAIF, NAADS, UCDA
	2. Monitor incidence of post harvest pests			Number of cases of post harvest pests	UCDA, NAADS, MAAIF
	3. Confirm status and integrity of pesticides at storage gate prior to use	Inspection of pesticides at farm/storage gate prior to use (Project Policy)		Records of pesticides applied at storage sites/ rooms	NAADS, MAAIF

Pesticides Management and Monitoring Plan

Potential Impacts and Risks	Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility
Improper use of pesticides by farmers and extension staff	Educate farmers and extension staff on proper use of pesticides and pesticide use hazards including use of PPE.	Pesticide hazards and use guide manual or leaflet for the project (include simple pictorial presentations)	Proper use of pesticides by farmers and farm assistants	Number of cases of pesticide poisoning occurring under the project	MAAIF, NAADS
	Control and supervise pesticide use on farms	Adoption of IPM approaches/ techniques	Farmers trained in IPM techniques	Number of farmers trained, Training records	MAAIF, NAADS
	Monitor pesticide residue in crops	Random sampling procedure for crops and storage products	Pesticide residue in crops within acceptable limit/MRL	1. Levels and trend of pesticide residue in sampled crops 2. Number of times exported crops are rejected due to pesticide residues	MAAIF
Pollution of water resources and aquatic life	Control and supervise pesticide use by farmers	Adoption of IPM approaches/ techniques	Farmers trained in IPM techniques	Number of farmers trained, Training records	MAAIF
	Proper disposal of pesticide containers by resellers/farmers	Pesticide container collection and disposal plan	Pesticide container disposal plan developed and implemented	1. Number of farmers/ resellers aware of pesticide container disposal plan 2. Number of containers collected	MAAIF
	Monitor pesticides in water resources	Environmental quality monitoring plan (linkage with Project ESMP)	Pesticide concentration in water resources (boreholes, streams etc.)	Levels of pesticides in water resources	NEMA, GAL, MAAIF
Abuses in pesticide supply and sales	Identify all pesticide distributors and resellers interested in providing services and products to farmers under the Project	Registration policy for all interested distributors and resellers under project	Only approved and licensed dealers and resellers supply pesticides under project	a) Company registration documents b) Evidence of license/permit to operate in pesticides c) Evidence of location and contacts of suppliers/resellers	ACB, UNBS, MAAIF, NAADS
	Confirm status and	a.) All pesticides are to be in	a) Only approved and	a) List of pesticides supplied and	ACB, MAAIF

	integrity of pesticides supplied under project Ban big pesticide containers to minimize decanting cases	the original well labeled pesticide containers prior to use b.) No decanting of pesticides under this project c) Inspection of pesticides at farm gate prior to use Decanting policy (No decanting of pesticides under project)	registered pesticides used under project b)Banned pesticides avoided c) Fake and expired pesticides avoided d) Integrity of pesticide guaranteed at farm gate level All pesticides delivered for use are in the original containers	used in line with Agricultural Chemicals Board b) Cases of pesticides found in non-original containers c) Inspection records for pesticides at farm gate prior to use Cases of pesticides found in non-original containers	
Poisoning from improper disposal of pesticide containers	1. Educate farmers, extension staff and local communities on health hazards associated with use of pesticide containers	1. Pesticide hazards and use guide manual or leaflet for the project	Farmers, extension staff, local communities educated on pesticide health hazards	Number of cases of pesticide poisoning through use of pesticide containers; Number of farmers returning empty pesticide containers at collection points; Number of farmers, extension staff, and resellers trained in proper cleaning of pesticide containers	DLG, NAADS, NEMA, MAAIF
	2. Properly dispose pesticide containers	2. Pesticide container cleaning and disposal plan	Pesticide container cleaning and disposal		
General health and safety of farmers/crops and environmental hazards	Educate farmers to adopt Best Practices based upon IPM techniques; and do not use chemical pesticides unless advised by MAAIF	IPM techniques with emphasis on cultural and biological forms of pest control	Compliance with national laws and WB policy on Pest/ pesticide management	Number of farmers trained in IPM techniques; Number of farmers implementing IPM on their farms Frequency of chemical pesticides usage	NAADS
	Provide PPEs to farmers/extension staff for pesticide use in the fields	Health and safety policy for farm work	Farmers and accompanying dependants (children) protected against pesticide exposure in the fields	Quantities and types of PPEs supplied or made available under the project	MAAIF and NAADS

	Educate farmers/ farm assistants in the proper use of pesticides	Pesticide hazards and use guide manual or leaflet for the project (include simple pictorial presentations)	Farmers know and use pesticides properly; pesticide hazards and use guide leaflet or flyers produced.	Number of farmers trained in pesticide use; Number of farmers having copies of the pesticide hazard and use guide flyers;	MAAIF and NAADS
	Properly dispose obsolete and unused pesticides	Obsolete and unused pesticide disposal plan	obsolete and unused pesticide disposal plan prepared and implemented	Relationship between pesticide supply and usage	MAAIF, NEMA
	Educate farmers to obtain or purchase quantities of pesticides required at a given time and to avoid long term storage of pesticides	Pesticide use policy/plan	Only pesticides needed are purchased; long term storage of pesticides by farmers avoided	Relationship between pesticide supply and usage	NAADS
	Provide emergency response to pesticide accidents and poisoning	Emergency response plan	Pesticide accidents and emergencies managed under the project	Number of pesticide accidents and emergencies	NAADS, DLG

12.7 Annex 7: Generic ToRs for ESIA for a subproject of ACDP

BACKGROUND

The Introduction indicates the purpose of the ESIA, presents an overview of the proposed project to be assessed, as well as the project's purpose and needs. It shall also briefly mention the contents of the ESIA Report and the methods adopted to complete the assessment. In addition, the consultant gives background information on the subproject as well as the need for the ESIA in line with national environmental policies and legislations.

OBJECTIVES OF THE ESIA STUDY

The main objective of the ESIA should be stated. The environmental and social impacts study should take into consideration all environmental and social impacts of the proposed subproject activities and identify the main environmental and social aspects that are likely to be raised by key stakeholders in order to optimize the project from the environmental and social point of view, by avoiding, minimizing, reducing or off-setting negative and enhancing positive impacts.

METHODOLOGY

1. **Desk Research and Literature Review**

The consultant shall perform a comprehensive literature review of key documents related to environmental, security, occupational health and safety legislation, policies, guidelines, manuals, procedures, practices, international best practices related to the project. The appropriate Field tools including questionnaires, data collection forms etc. shall then be developed.

2. **Site Investigation**
   - The consultant shall visit the project area with the aim of identifying the following:
   - Physical-cultural and historical sites
   - Noise sensitive areas
   - Wildlife habitats, feeding, and crossing areas
   - Proximity to residential places, road network, recreational activities etc.
   - Hydrological setting

3. **Public and Institutional Consultations**
   - The consultant shall carry out extensive consultations with all key stakeholders including but not limited to the following:
   - NEMA
   - MAAIF
   - District Local Government Officials
   - Cultural Leaders
   - Smallholder farmers

4. Analysis of Project Alternatives

The Consultant shall identify and systematically, undertake comparison of the potential Project Alternatives taking into account environmental and social factors such as:

- Sites – Assess suitability of the site and potential alternative sites;
- No-Project Scenario: This will include the alternative of not having the project to demonstrate environmental, social, and economic conditions without it.

5. **Impact Analysis**

The consultant shall evaluate potential project impacts considering planning, construction, and operation stages which shall cover social, ecological, and environmental issues. Identification of impacts shall include positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts, unavoidable or irreversible impacts. The assessment of the potential impacts will also include; landscape impacts of excavations and construction, loss of nature features habitats and species by construction and operation, soil contamination impacts, noise pollution, soil waste, and socio-economic and cultural impacts.

TEAM COMPOSITION

The ESIA Experts for ACDP Subprojects shall comprise of experts proposed herewith. It is important that, the ESIA teams are constituted taking into account the prevailing conditions on the proposed subproject sites.

Environmental Management Specialist (Team Leader)

Key Qualifications:

a. He/she should posses the following qualifications:
b. At least an MSc. Environmental Management, Natural Resource Management or Environmental Engineering;
c. Should have undertaken specialized trainings in Environmental Impact Assessment (EIAs) and Environmental Audits.
d. Must have undertaken at least 5 EIA at the level of Team Leader position; and
e. Should be registered with NEMA as an Environmental Practitioner and also certified as a Team Leader;
f. Should have done at least two environmental related works in Uganda.

Tasks:

He/she will perform the following roles:

a. Provide overall coordination and leadership to an EIA team;
b. Take a leadership role in steering stakeholder consultations during EIA ;
c. Play an inter-phase role between client, NEMA and other stakeholders on matters of EIA of subprojects;
d. Conduct site visits of planned subprojects;
e. Identify impacts of subproject activities on environment components like surface and ground water, soil and air;
f. Participate in the elaboration of technical, legal and regulatory norms to comply with environmental requirements in all the chain of project activities;
g. Identify, assess and propose environmental mitigation measures for the subproject; and
h. Prepare an ESMP for the project.

Ecologist

Key qualifications:

a. Must have a postgraduate training in natural sciences (forestry, botany or zoology);

b. Must have undertaken an EIA training;
c. Conducted at least 5 EIAs studies in development projects.

Tasks:

a. Take a lead in the ecological investigations of the project;
b. Assess biodiversity resources in the project area in terms of birds, mammals and plants amongst others;
c. Contribute to relevant sections of the ESIA, including the inventory and estimation of flora and fauna management, and in the management;
d. Consult with stakeholder institutions on ecological aspects of the subproject;
e. Review various literature sources on ecological matters of the sub-projects; and
f. Participate in write up of Environmental Impact Report.

Socio-economist

Key qualifications:

a. He/she should have undertaken postgraduate training in the fields of sociology, anthropology or social work or related social sciences;
b. He/she must have attained trainings in EIAs;
c. He/she should have conducted EIAs with experience of at least 5 years; and
d. Must be registered with NEMA.

Tasks:

a. Take a lead in stakeholder consultations especially with the smallholder farmers, local residents etc.;
b. Identification of problems related to gender, youth and HIV, and economic activities of the project, customary and administrative authorities and structures;
c. Describe, analyze and evaluate significant impacts of the project with respect to social and community sustainability;
d. Provide socio-economic input/expertise throughout the assignment;
e. Lead in the formulation of social survey instruments; and
f. Provide social input in the Environmental Impact Report.

Agricultural Specialist

Key qualifications:

a. He/she should have at least a postgraduate degree in agriculture;
b. He/she must have attained trainings in EIAs;
c. He/she should have conducted EIAs with experience of at least 5 years; and
d. Must be registered with NEMA.

The Agricultural Specialist will take a lead in the following tasks:

a. Provide agronomic description of the planned agricultural intervention in ACDP subproject;
b. Document any agro-biodiversity in the area;
c. Undertake analysis of the cropping systems and related agricultural aspects in the ESIA;
d. Propose plans for improved farming techniques and environmental and social sustainability;
e. Assess any likely environmental and social impacts of the planned activities in the agricultural perspective;

f. Propose mitigating measures and corresponding costs;
g. Contribute to the preparation of reports required from the consultant; inception report, assessment, general progress and ad hoc reports, ESMP report.

Irrigation Engineer
Key qualifications:

a. He/she should have a degree in agricultural engineering and a postgraduate training in irrigation fields;
b. He/she must have attained trainings in EIAs;
c. He/she should have conducted EIAs with experience of at least 5 years; and
d. Must be registered with NEMA.

Key tasks

a. Provide a description of irrigation activities to be undertaken in the project;
b. Undertake environmental analysis, evaluation of the likely impacts of the proposed irrigation works (including hydraulic and conveyance structures and their operation) on the environment, especially on water resources, and Propose appropriate mitigation measures with the corresponding costs; and
c. Contribute to the preparation of reports required from the consultant in the ESIA study.

Environmental Engineer

a. The Expert must be a holder of a first degree in Environmental Engineering with experience spanning at least 5 years;
b. Must have training in OSH aspects; and
c. Must have experience in conducting EIA studies on infrastructures relating to agriculture and agro processing.

Key Tasks:

a. Take a lead in environmental impacts of project facilities in terms of its phases;
b. Participate in identification of impacts of project activities on environmental components especially related to the project;
c. Participate in the stakeholder consultations;
d. Assess and develop recommendations regarding hygiene, safety equipment, facilities and mitigation and enhancement measures;
e. Take a lead in provision of input on waste management throughout the assignment; and
f. Participate in the development of the ESIA report.

EXPECTED DELIVERABLES

The Consultant shall produce an ESIA report acceptable to NEMA and the funding institution and the report shall include the following as per the requirements by the Environmental Impact Regulations of Uganda:

a. An executive summary stating the main findings and the recommendations of the study.
b. the project and of the activities it is likely to generate;
c. the proposed site and reasons for rejecting alternative sites;
d. description of the potentially affected environment including specific information necessary for identifying and assessing the environmental effects of the project;
e. the material in-puts into the project and their potential environmental effects;
f. an economic analysis of the project;

g. the technology and processes that shall be used, and a description of alternative technologies and processes, and the reasons for not selecting them;
h. the products and by-products of the project;
i. the environmental effects of the project including the direct, indirect, cumulative, short-term and long-term effects and possible alternatives;
j. the measures proposed for eliminating, minimizing, or mitigating adverse impacts;
k. an identification of gaps in knowledge and uncertainties which were encountered in compiling the required information;
l. an indication of whether the environment of any other State is likely to be affected and the available alternatives and mitigating measures.

12.8 Annex 8: Chance Find Procedures

Chance find procedures will be used as follows:

a. Encounter or detection of a PCR
b. Stop the construction activities in the area of the chance find;
c. Delineate the discovered site or area;
d. 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;
e. 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 hours or less);
f. 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 archeologists 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;
g. 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 archeological importance) conservation, preservation, restoration and salvage;
h. Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Directorate of Museums and Monuments; and
i. 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;
j. 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;
k. 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
l. 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.

12.9 Annex 9: Examples of Contract Clauses for Civil Works

The following information is intended solely as broad guidance to be used in conjunction with local and national regulations. Based on this information, environmental rules for contractors should be developed for each project, taking into account the subproject size, site characteristics, and location (rural vs. urban). After choosing an appropriate site and design, construction activities can proceed. As these construction activities could cause significant impacts on and nuisances to surrounding areas, careful planning of construction activities is critical. Therefore the following rules (including specific prohibitions and construction management measures) should be incorporated into all relevant bidding documents, contracts, and work orders.

PROHIBITIONS

The following activities are prohibited on or near the project site:

- Cutting of trees for any reason outside the approved construction area;
- Hunting, fishing, wildlife capture, or plant collection;
- Use of unapproved toxic materials, including lead-based paints, asbestos, etc.
- Disturbance to anything with architectural or historical value;
- Building of fires;
- Use of firearms (except authorized security guards);
- Use of alcohol by workers.

PROTECTION OF ARCHAEOLOGICAL AND HISTORICAL SITES

A clause for "Protection of Archaeological and Historical Sites' should be added to all bidding documents for the works contract which explains the steps to follow whenever new archaeological remains, antiquity or any other object of cultural or archaeological importance are encountered during construction.

Excavation in sites of known archaeological interest should be avoided. Where this is unavoidable, prior discussions must be held with the Department of Museums and Monuments in order to undertake pre-construction excavation or assign an archaeologist to log discoveries as construction proceeds. Where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in an area not previously known for its archaeological interest, the following procedures should be applied:

- Stop construction activities.
- Delineate the discovered site area.
- Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over.
- Notify the responsible foreman/archaeologist. Who in turn should notify the responsible authorities, Department of Museums and Monuments and local authorities (within less than 24 hours)
- Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out.

- An evaluation of the finding will be performed by the Department of Museums and Monuments. The significance and importance of the findings will be assessed according to various criteria relevant to cultural heritage including aesthetic, historic, scientific or research, social and economic values.
- Decision on how to handle the finding will be reached based on the above assessment and could include changes in the project layout (in case of finding an irrevocable remain of cultural or archaeological importance), conservation, preservation, restoration or salvage.
- Implementation of the authority decision concerning the management of the finding.
- Construction work could resume only when permission is given from the Department of Museums and Monuments after the decision concerning the safeguard of the heritage is fully executed.

In case of delay incurred in direct relation to Archeological findings not stipulated in the contract (and affecting the overall schedule of works), the contractor may apply for an extension of time. However the contractor will not be entitled for any kind of compensation or claim other than what is directly related to the execution of the archeological findings works and protections

CONSTRUCTION MANAGEMENT MEASURES

Waste Management and Erosion:
Solid, sanitation, and, hazardous wastes must be properly controlled, through the implementation of the following measures:

Waste Management:
- Minimize the production of waste that must be treated or eliminated.
- Identify and classify the type of waste generated. If hazardous wastes (including health care wastes) are generated, proper procedures must be taken regarding their storage, collection, transportation and disposal.
- Identify and demarcate disposal areas clearly indicating the specific materials that can be deposited in each.
- Control placement of all construction waste (including earth cuts) to approved disposal sites (>300 m from rivers, streams, lakes, or wetlands).
- Dispose in authorized areas all of garbage, metals, used oils, and excess material generated during construction, incorporating recycling systems and the separation of materials.

Maintenance:
- Identify and demarcate equipment maintenance areas (>30m from rivers, streams, lakes or wetlands).
- Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas; never dispose spent oils on the ground, in water courses, drainage canals or in sewer systems.
- Identify, demarcate and enforce the use of within-site access routes to limit impact to site vegetation.
- Install and maintain an adequate drainage system to prevent erosion on the site during and after construction.

Erosion Control

- Erect erosion control barriers around perimeter of cuts, disposal pits, and roadways.
- Spray water on dirt roads, cuts, fill material and stockpiled soil to reduce wind-induced erosion, as needed.
- Maintain vehicle speeds at or below 10mph within work area at all times.

Stockpiles and Borrow Pits

- Identify and demarcate locations for stockpiles and borrow pits, ensuring that they are 30 meters away from critical areas such as steep slopes, erosion-prone soils, and areas that drain directly into sensitive water bodies.
- Limit extraction of material to approved and demarcated borrow pits.

Site Cleanup

- Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for construction debris.

Safety during Construction

The Contractor's responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents, including the following:

a. Carefully and clearly mark pedestrian-safe access routes.
b. If school children are in the vicinity, include traffic safety personnel to direct traffic.
c. Maintain supply of supplies for traffic signs (including paint, easel, sign material, etc.), road marking, and guard rails to maintain pedestrian safety during construction.
d. Conduct safety training for construction workers prior to beginning work.
e. Provide personal protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed and –shanked boots, etc.,) for construction workers and enforce their use.
f. Post Material Safety Data Sheets for each chemical present on the worksite.
g. Require that all workers read, or are read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant.
h. Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers.
i. During heavy rains or emergencies of any kind, suspend all work.
j. Brace electrical and mechanical equipment to withstand seismic events during the construction.

Nuisance and dust control

To control nuisance and dust the Contractor should:

a. Maintain all construction-related traffic at or below 15 mph on roads within 200 m of the site.
b. Maintain all on-site vehicle speeds at or below 10 mph.

c. To the extent possible, maintain noise levels associated with all machinery and equipment at or below 90 db.
d. In sensitive areas (including residential neighborhoods, hospitals, rest homes, etc.) more strict measures may need to be implemented to prevent undesirable noise levels.
e. Minimize production of dust and particulate materials at all times, to avoid impacts on surrounding families and businesses, and especially to vulnerable people (children, elders).
f. Phase removal of vegetation to prevent large areas from becoming exposed to wind.
g. Place dust screens around construction areas, paying particular attention to areas close to housing, commercial areas, and recreational areas.
h. Spray water as needed on dirt roads, cut areas and soil stockpiles or fill material.
i. Apply proper measures to minimize disruptions from vibration or noise coming from construction activities.

Community Relations

To enhance adequate community relations the Contractor should:

a. Following the Ugandan and EA requirements i.e. inform the population about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, as appropriate.
b. Limit construction activities at night. When necessary ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures.
c. At least five days in advance of any service interruption (including water, electricity, telephone, and traffic routes) the community must be advised through postings at the project site, at bus stops, and in affected homes/businesses.

Environmental Supervision during Construction

The bidding documents should indicate how compliance with environmental rules and design specifications would be supervised, along with the penalties for non-compliance by contractors or workers. Construction supervision requires oversight of compliance with the manual and environmental specifications by the contractor or his designated environmental supervisor. Contractors are also required to comply with national and municipal regulations governing the environment, public health and safety.

12.10 Annex 10: Information and Issues Raised During Public Consultations

Dr. Mark Erbaugh – IPM CRSP in Uganda and Prof. Samuel Kyamanywa of Makerere University College of Agriculture	• **Vulnerability to Pests/Diseases** - Uganda is very highly vulnerable to pests and diseases; virtually every crop requires some form of pest management for its cultivation. One of the reasons is the country's location in the tropics which has a lot of food for pests in addition to the weather that favours the pests and diseases. For example, historically, the Coffee Wilt Diseases was a big problem. However, as it was being managed, the Twig Borer broke out. For cassava, the problem has been the cassava mosaic disease. Now the new challenge is the Brown Streak diseases. Therefore pests and diseases problems are endless. • **Economic Losses** – There is no latest literature on the economic losses caused by pests and diseases in Uganda. The only existing work was done by Peter Walker during the colonial days up to 1967. There has not been a serious need of doing serious loss assessment as effort has moved from understanding the pests and diseases to managing them i.e. if the stalk borer is there, go and kill it. • **Ongoing Studies** – the CRSP is currently conducting studies on the economic thresholds for crops based on different ecological zones including coffee. • **Need for IPM** – The ACDP is considering 5 crops i.e. coffee, beans, rice, cassava and maize; each requires different priorities and pest management styles. Therefore, there is need for IPM to address all of the problems. • **Information** – Agricultural information management in the country is still poor and investment is required to have such a system in place. • **IPM Knowledge** – Based on experience from a number of IPM studies in Uganda under the CRSP, weeds has been mentioned by smallholder farmers as a big constraint to farmers. The farmers have some knowledge on pests but know very little about diseases. In addition, as regards pests, the farmers are actually mainly familiar with the "big" pests. • **IPM Adoption Mechanism** – The 2 key strategies that have been tested in Uganda by the IPM CRSP in Uganda are the Participatory Rural Appraisal (PRA) and the Farmers' Field Schools (FFS). There is need to engage the farmers on each step of the pest/disease problem i.e. to identify the problem, at farm trials and then during evaluations. The PRA model includes organizing the farmers in small groups of say 5-20 and asking them about their important crops, the important constraints to production and the important pests and diseases. So such surveys are conducted to get quantitative data as well as its validation. In addition, the feasible controls are identified, the pests and diseases monitored and knowledge gaps identified. The PRA is important as it engages the farmers in conducting the surveys and is also a critical strategy in acquiring indigenous knowledge. However, it is a very intensive and expensive method and therefore may not be feasible for a project such as ACDP that is targeting the whole country. The other strategy is the "modified FFS" where farmers are educated about the whole cropping system including basic agronomy and identification and management of pests. After that, the farmers are tested on what they have learnt and evaluations conducted. The FFS has been popularized in Indonesia

	and it is a very effective mechanism for IPM adoption. Unlike the typical FFS where the schools last a month or so continuously, what has been tested in Uganda are the "modified FFS" typically a week or once in a month. • **Constraints to IPM Adoption** – The farmers have been ignored for a longtime and don't know what to do. There is need for MAAIF or Government to show interest in what they (farmers) do. The farmers need to be trained to build their confidence. There is need to demonstrate to them and to make them participate. This can be done through village schools that can be run by extension staff to teach the farmers. • **Knowledge of Extension Staff** – Extension workers need training in areas of pest and disease identification, IPM and alternatives to pesticide use as well as in-service training i.e. new areas of science to help them do their job. In addition, there is need to redefine the role of extension workers. • **Pesticides Misuse** – There is need to sensitize the masses. An interesting example is the practice of spraying harvested tomatoes with fungicides to preserve tomatoes sold in markets in Uganda. **Research areas:** 1. There is need to conduct economic losses assessment to have a basis for prioritizing and targeting a particular pest or disease. 2. Economic Action Thresholds for the different crops. 3. Genetically Modified Organisms (GMOs) might be a solution to the existing pest problems and should be considered. 4. There is need for IPM packages for specific crops. **Recommendations on Research and Capacity** 1. There is need to build capacity of people capable of conducting quality agricultural research. Currently, there are only about 6-7 Agricultural Entomologists at PhD level (2 Entomologists and 1 Nematologist at MUK). Priority areas include entomology, plant pathologists and weed scientists among others. 2. There is need for MAAIF to engage MUK more in research. NARO should build clear collaborative research linkages with MUK to ensure stronger synergies. 3. There is need for consistence in research and therefore it is important that the good researchers in Uganda are paid well to ensure that they continue with their research work; otherwise if they abandon it and join other organizations or leave the country for greener pasture, then that will affect the continuity of research. 4. There is need for developments of transferring technology to the extension workers. 5. Few donors are willing to fund studies on the ecology and biology of pests. However the right thing to do is to spend money on studies or research to predict ways on how to deal with the pest and disease problems. 6. Research is a continuous process as pests and diseases change over time. You have to deal with residual populations. 7. Agricultural research has been underfunded by Government because the Government doesn't appreciate that agricultural research is actually a public good.

Tony Kiwanuka – ESIA Assistant at NEMA 16/1/2014	**Environmental Issues** • Rice mainly grows in wetlands; it is important to map out the sections of wetlands to be utilized; • It is important to involve the local leadership from the start of the project so as to understand the key concerns of the stakeholders; • It is important to obtain the required permits from NEMA for activities to be carried out in the wetlands; • It is key to identify the portions of wetlands to be utilized and what to be left for ecological purposes; • Overall, the project will require a detailed ESIA
Mr. Ssenyonjo Nicholas – Executive Director of Uganda Environment Education Foundation (UEEF)	We welcome the project since agriculture is the backbone of Uganda. However, there is need to mobilize and educate the farmers to ensure that they fully benefit from the project. We have been engaged in educating farmers on safe agricultural practices especially regarding use of pesticides. Therefore, MAAIF should engage NGOs like us to implement the project because we are already on the ground.
Dr. Friday Agaba – Commissioner – Principal Medical Officer, Ministry of Health	Pesticide abuse has become a serious problem in this country. If the project envisages the use of pesticides, then it should work with the MoH to put in place proper safeguards to ensure that cases of pesticide abuse do not increase.
Mr. Julius Oboth – Imports Officer at Uganda Revenue Authority.	Over the years, we have engaged in inspection to ensure that banned and fake pesticides are not imported into the country. We shall continue working with MAAIF Inspectors to address this issue.
Mr. Stephen Okia – Analyst at Government Analytical Laboratory Wandegeya	GAL has the capacity to analyse pesticides to determine quality as well as for environmental monitoring purposes.
Ongor Joseph Wetlands Management Department 16/1/2014	• How many people are going to be employed under the irrigation schemes in the wetlands? • Sanitation has been an issue as some rice schemes involve thousands of people utilizing the wetlands; some people actually defecate in the wetlands; • Hydrology – How will the project ensure that the ecological functions of the wetlands are not drastically affected? In Olweny, some fields dried up and the volume o the water in the streams declined. The detailed studies (ESIA) should give mitigations to address the challenges; • Much of the water that moves through the wetlands comes from the catchment; how do we ensure that the nearby springs and wells do not dry up? Wells need water; how do we balance the water needs? • Conflicts – People who have been grazing in or near the wetlands may be against conversion of the wetlands into rice cultivation; • Ecology – How do we ensure that the frogs, birds, and other rodents remain in the wetlands? Birds can clear rice fields and rodents can

	uproot young seedlings; so how do you find the balance? • Agrochemicals – Communities downstream of wetlands utilize water for drinking and for livestock; how do we ensure food safety e.g. of beef for consumers? Contamination of the food chain has to be considered; • Some families use their children to scare away birds; the new schemes may be a disadvantage to education in the respective areas. If the schemes are profitable, children may abandon education and venture into rice cultivation. How do we find a balance not to affect education? • Increased revenues from rice will mean big chunks of money which may motivate men to marry more women which may lead to collapse of families in addition to HIV/Aids issues; • Rice being a commercial crop may be a motivation of farmers to abandon other essential food crops; issues of food security have to be assessed? • Gender issues – In Agor wetland in Lamwo, opening up of land is by men while weeding, harvesting and threshing is done by women. The children are supposed to scare away birds. However when it comes to selling, men typically do it alone under pretense that they have the energy to transport the rice on bicycles to the market. In the end, the women have no powers over the proceeds. These issues need to be addressed to ensure that women equally benefit from the project; • Invasive species – seeds are not always sorted prior to sowing and some of these seeds contain invasive species which can colonize and occupy the entire wetland. Mitigations on how to ensure invasive plant species don't get into the wetlands have to be proposed; • Silt – A lot of silt materials are accompanied with opening up of drainage canals; it is important to ensure that the soil retaining capacity of the wetlands is enhanced; • Sustainability – Schemes collapse after some time due to funding among others; as the schemes collapse, they do along with the ecological and hydrological functions of the wetlands. Olweny 3 in Lira collapsed with both the ecology and hydrology of the wetland as people invaded the wetlands when the scheme collapsed. The project was handed over to the district which had no money and also abandoned the scheme. At one point, the scheme actually belonged to nobody. Therefore, there should be mechanisms to ensure if the project ends, the ecological and hydrological functions of the wetland are maintained. The project should build capacity of the districts to handle the project. There has to be transition when handing over the schemes to the districts. • How long is the project? If to be handed over, to whom? Are local governments well equipped to take over the projects in due course? Do they have agricultural officers to handle the projects? • If the project affects water quality, what action will be taken and who takes it? Analysis and monitoring – at what period or frequency? Who takes action on the results? • Crops – What is the basis of the crops selected for cultivation in the wetlands? In some cases, onions have been more profitable than rice such as in Olweny. The choice of crops and their impact on the wetland ecology should be assessed taking into account the types of crops preferred by the farmers themselves;

	• Wetland use permits – There are procedures for use of wetlands. Anything beyond ¼ of an acre requires the intended user to apply for a Wetland User Permit to the District Environment Officer (DEO) by filling an application form. The DEO then sends the application to the District Environment Committee which either approves or disapproves the application. If approved, the applicant is also required to prepare a detailed Project Brief that is sent to NEMA for review. NEMA seeks input or comments from stakeholders and where satisfied issues a Wetland User Permit. Typically, a full ESIA is not required. However if the use o the wetland involves components like dams, milling etc., then a full ESIA report is required. If say 10-20 people intend to utilize the wetland, a Project Brief should be adequate. However if it is a scheme of many people, them it is likely that modifications of the wetland will occur and therefore the need for detailed assessments (i.e. full ESIA). Audits are required every 2 years to provide information on how much the wetland has been impacted and to verify if the mitigations have been put in place; • The Wetlands Management Department also reviews the Project Briefs or ESIAs and conducts both monitoring and enforcement to ensure that the wetlands are not degraded. • Capacity – The Wetlands Department has human resource constraints especially as regards field compliance monitoring and enforcement; it requires more staffing.
Richard Kyambadde – Wetlands Department	• Irrigation sites such as Mubuku have been encroached upon; initially a small number of people utilize a wetland but in the end more people occupy the wetlands and even take up plots for homes in the long run; • If farmers are interested in utilizing a particular wetland, land acquisition or wetland use is permitted by the District Local Government. The Wetlands Department however guides the use of such wetlands. There is a minimum area of wetland use that requires assessment before a decision on its use is reached; • There are challenges in monitoring wetland use in Uganda as environmental audits of wetlands underutilization are very rare; • Rice has been grown in many wetlands without conducting any ESIAs which is a critical issue; • Wetlands are not agricultural land unless modified; • The challenge with pesticide use in crops cultivated in wetlands is that you are dealing with water-logged; so there is potential of direct contact between the pesticides and a threat of accumulation of these agrochemicals and therefore toxicity and pollution issues may arise; • There is high risk of contamination of ecosystems and related systems i.e. lakes and rivers; • It is the mandate of NEMA to ensure that audits are conducted to follow-up wetland use permits to verify compliance with conditions of approval; not sure if audits for agricultural projects are being conducted.

Kiryandongo District	
Sekamatte Stephen	• Common pests and diseases of maize in the district include the

Ag. District Commercial Officer/Agricultural Officer- Kiryandongo District Businge David- Senior Probation Officer - Kiryandingo	following; Maize Stalk borer, maize streak and smat. The witch weed (Striga) is also very prevalent in the district. • Maize lethal necrosis is a threatening disease though not yet in Kiryandongo, its common in the Busoga districts, therefore can easily be introduced to Kiryandogo. • Management is by use of insecticides like Ambush, tarfgor, Duducyper, Dimethoate. • To control maize striga, farmers are usually advised to plant early, practice crop rotation, other just apply fertilizers to boost growth and allow the maize compete favorably with the weed. • Farmers are encouraged to use all possible methods of pest management, cultural methods are predominantly used like burning, crop rotation, mulching, and early planting. • Training in Integrated Pest Management has not been seriously under taken by the extension staff, however, to help farmers further manage pests and diseases, this project (ACDP) should set up Integrated Pest Management Demos at every parish. • The use of chemical in managing pests and diseases is very limited. • Farmers do not consider the loss due to pests especially the maize stalk borer as significant; as such they hardly manage it. • In Kenya striga is managed by use of Imidazolinone Resistant maize (IR Maize). This maize is pretreated with a chemical, it's resistant to striga. • Annual loss of the maize crop due to pests and diseases in the district is not known. Data on annual production in the district is scanty since it's not collected regularly. The ratio of extension workers to farmers in the district is 1:1000. There are 7 NAADS extension workers (Crop), 1 DAO and 1 AO. Lack of transport is the biggest challenge face by the extension workers. • The extension workers are supposed to collect data on crop production from the field, conduct monitoring and surveillance of diseases in the fields, training farmers in good farming practices etc. • The District Agriculture Officer is supposed to report to the Ministry twice every year on any disease outbreak. In case of an outbreak in the district, there is a grant, the Production and Marketing Grant (PMG) to handle such emergencies, 45% of this grant is spent on training farmers, while 55% is channeled to capital developments like establishing demonstrations. • Storage facilities for the maize include traditional cribs, (Handles 400-600Kg) modern cribs (1000Kg-3000Kg) and stores. However, if possible the project should introduce warehouses at village level which are managed by the farmer themselves in their established structures. Currently, farmers are in groups but do not process their produce nor store it collectively. Middle men have exploited this loophole to exploit the farmers. Such facilities will help farmers to attract better prices for their produce at the right time. • The common land tenure system in the district is customary

	• Agrochemicals used by the farmers are supplied by the local drug dealers in the towns and trading centers. They are licensed by the respective lower local governments. Regulation of fake agrochemicals on the market is not done since the district does not have the expertise to do so. • Farmers have complained about fake seeds and agrochemical on sale in the district. Some drug shop operators are not trained or completely illiterate, they instruct farmers wrongly. • In response to the farmers' outcry, the district has embarked on formulating an ordinance for controlling the sale of agrochemicals and other farm inputs. The draft ordinance is out and will be sent to the solicitor general for review before it's passed by the district council. We request that the project (ACDP) supports the implementation of this ordinance. **Training needs recommended under this project include**; • Value addition skills; • Use and handling of agrochemicals; • Gender and environment mainstreaming in the agriculture
Gift Grace- Agro-Chemical Shop operator (Mo-AgroLinK-Kiryandongo) Opio Sam Oceng – Cassava farmer	• The owner of the business is trained in Agricultural management but the operator is not trained, she holds an ordinary certificate in education and without any specialized training in handling and management of agrochemicals. She was trained on job by the owner. • There is no supervising authority and the sale of fake chemicals is not checked in any way. The town council issues trading license to the drug shop but is not bothered of what is sold. • Expired drugs are taken back to the supplier but only when picked by the supplier, hence they continue to be displayed in as long as they have not been picked by the supplier. • PPE are available in the shop but are hardly bought by the farmers, farmers rarely use them while applying the chemicals. • Chemicals usually stocked for maize growers include the following; - Ambush (insecticide) - Supagro (Growth booster) - Rapid gro (Growth booster) - Booster (Growth booster) - NPK (Fertilizer) - Urea (Fertilizer) - DAP (Fertilizer)
Apac District	
Ojok George Johnson – District NAADS Coordinator, Apac	• There are 11 sub counties in the district and 33 NAADs extension workers. Only 11 of these have means of transport (Motorcycle). • The road network is still very poor, there only foot paths to most cassava gardens

Opio Sam Oceng – Cassava farmer-Apac	• Common pests and disease of cassava include the following; • Cassava brown streak virus • Cassava mosaic virus • Pests are insignificant, annual loss due to pests and diseases is approximately 5%. • Disease management practices include; timely weeding, controlling the movement of planting materials • Farmers have been encouraged to plant recommended species/varieties, for example, NASA14 which is resistant to the cassava mosaic has been adopted by all farmers in the district. • Disease surveillance and monitoring is done by the district staff who in turn report to the zonal Agricultural Institute in Lira. There is a technology link officer and several researchers who are attached to Namulonge Agricultural Research Institute. • A few farmers were given 'seed' cuttings and trained in multiplying them. They have multiplied enough cutting to supply all farmers in the district and have now resorted to selling the excess cuttings to South Sudan. • Use of pesticides is not there at all. • Biggest challenge is post-harvest losses; farmers should be assisted to minimize the losses they incur especially in the process of drying. If possible this project should look at providing cassava slicing machines, solar dryers and processing and packaging plants. • There are no specially designed stores for the dried cassava; most of it is stored in the farmers' houses. • There is a need to establish stores for each farmer group (cluster) so that the cassava is marketed collectively. • The annual loss attributed to post harvest handling alone is at approximately 20%. • Farmers have organized themselves into groups and do market their produce (cuttings and dry cassava) themselves. Training needs identified for the district staff include; - Training in post-harvest handling of cassava - Training in agronomic practices - Training in value addition - Soil and water conservation/management What criteria used in selecting areas of the project? Some areas which are main producers of the ACDP targeted crops are not included in the project!
Lira District	
Alum Dorcus – Senior Agricultural Officer	• There is more paddy rice than upland rice. • There are no agrochemicals used, only to a very limited extent, some farmers have started applying fertilizers. Generally, the soil quality is deteriorating as evidenced by the declining yields. The proposed project should put some emphasis on soil management and use of

Otim Ayita - Agricultural Officer Oder John – Farmer Ojom Opero- Farmer	fertilizers. • Water quality monitoring is not conducted but since the use of agrochemicals is very limited in most wetlands in the district, it is assumed that the water quality is unchanged. However, major pollution sources are from human wastes. There are no sanitary facilities close to the paddy fields. • Snails exist in the paddy fields but the district has not received any cases of Bilharzia • Challenges faced by farmers include; - Lack of pure rice seeds - Lack of adequate water for the farmers downstream, the irrigation canals have become silted over time and the water flow downstream is greatly hampered. These canal need to be desilted to allow free and faster movement of water. As a result of the water not flowing freely, some fields upstream have ended up flooding. Ideally, these canals are supposed to be desilted at least once every 5 years. Desilting is labour intensive and cannot be done by the farmers themselves. They require an excavator which is expensive for the farmers to acquire. However, the farmers have tried on their own to desilt the smaller canals. - Rice yellow motto virus. This virus does not attack upland rice. For the paddy rice farmers, NERICA46 is resistant to the virus and is therefore being promoted in the district. - Poor water management within the paddies, denying downstream users of the right quantity required for their rice. At times all the water is utilized by the farmers upstream. • The soils are deteriorating in quality and therefore there is need for application of fertilizers. Some farmers have started applying fertilizers while others still perceive it as an extra production cost. • There is need for decentralized seed supplier who can easily be monitored by the district or any other competent authority. • If the project intends to provide seed and other inputs, these should not be given free of charge to farmers, they need to contribute something which will employ them to develop a sense of ownership of the project. • Training needs identified for the extension workers include; - Quality seed production; - Irrigation and water management; - Post-harvest handling • Division of labour in rice growing - Nursery preparation- Done by Men - Field preparation- women and men - Weeding (Broad casted rice)- Women - Weeding (Planted in rows)-men and women - Bird scaring- Children and women - Harvesting- women but a few men participate - Transportation from the fields- men - Drying-Women

	- Bagging- men - Selling/Marketing- men
Ntungamo District	
Atwine Esther- District Agriculture Officer Mugume Peter – Farmer Tutemberwe James – Agrochemical Dealer	• The coffee here is intercropped with bananas mostly, the bananas provide good shed for the coffee trees as well as mulch. • Production of crops in commercial quantities especially for sale and regional market is possible but the country lacks agencies to deal in the sale of food crops unlike coffee which is spearheaded by UCDA how is rice, beans and cassava traded? • There 30 coffee processing machines distributed all over the district but the demand is still there for more machines and farmers are willing to provide land for their establishment. Farmers don't sell unprocessed coffee (Kiboko) because it fetches less money. Some middle men have established coffee stores in the villages where they buy and keep unprocessed coffee at low prices from farmers. • Though the bananas contribute tremendously to farmers' daily income, the coffee is valued more by the farmers because it contributes to capital development in the homes. Farmers use proceeds from coffee to construct houses, pay school fees while the proceeds from banana usually go to food items and other consumables like paraffin. Common pests and diseases include the following; - Black trig borer - Coffee wilt; this has now been managed by intercropping with the bananas, planting resistant varieties. Other pests and disease management interventions under taken by the district include; - Sensitization of farmers on good hygiene - Use of cultural control methods like destroying infected plants or parts - The use of pesticides is very limited in the district because most coffee farmers subscribe to the Abategenda Farmers Association which deals in organic coffee. Actually 80% of the farmers in the district belong to this association. • There is no laboratory for crops but there is a mobile plant clinic operated by the district. The clinic operates in the weekly markets (auctions). The clinic comprises of a plant pathologist and 2 assistants. Farmer who come to the markets carry samples of diseased plant parts to the pathologist who in turn identified the disease and also recommends the appropriate intervention. The clinic is a very effective way of advising farmers on diseases control and management but it also has its own challenges; • There are only 3 trained pathologists, and yet many markets operates on the same days, hence the clinic cannot be in all markets at the same time • They all don't have a vehicle to carry their equipment (Tent, chair, seats, microscope etc). Hence their movement is limited to only those

	nearby markets • Farmers who don't subscribe to the Abetagenda Association (who use inorganic chemicals) buy their agrochemicals from the local drug dealers. Usually, insecticides are applied on the coffee targeting the borers. The use of insecticides is only once a year when the berries are ripe. All the agrochemical shop operators have been trained by Uganda National Agro Dealers Association (UNADA) in handling agrochemicals. The District Agriculture Office inspects these shops but their certification is by UNADA In many households, the pump used for spraying cattle is also used to spray coffee and there is no use of any protective equipment apart from gum boots. Coffee seedlings are distributed by certified nursery operators. The actual purchase of the seedlings is by either the NAADs programme, Uganda Coffee Development Authority or the area members of parliament. It's the farmers' responsibility to look after the seedling right form the nursery where he has picked it from to the farm until it matures. There have been cases of untimely distribution of the seedlings by some nursery operators, where seedlings were distributed during the dry season and they all ended up drying at the farmers homes. The nursery operators should liaise with the district agriculture officer to advise them on the right planting seasons. Challenges Inadequate facilitation to the extension workers; in terms of allowances, transport and field kits, especially for disease control and monitoring; There is tremendous loss due to post harvest handling, farmers lack drying facilities; wet processing machines have been suggested but they are expensive for the farmers; Lack of general farm inputs; High post-harvest handling losses; The farming is purely rain fed; irrigation is possible since there are several streams with plenty of water. Irrigation canals can be constructed from these streams and the water taken to the coffee plantations The common land tenure system in the district is customary, on average; every household owns 2.5 acres of land. There 21 sub counties in the district and 63 extension worker, therefore each sub county has 3 extension workers Training needs for the staff include the following; Training in pests and disease management; Coffee management skills Post-harvest handling Soils conservation and management Helping bring pesticides is a welcome undertaking but of recent in the villages, the pesticides are being increasingly abused i.e. committing suicide, killing of birds in rice fields and poisoning dogs. How can such abuses be controlled? How will fertilizers and pesticides be distributed in the project?

Mwesigye Elias John-Farmer	Will they be free or they will be sold out?
Kabale District	
Kasimbazi James- District NAADs Coordinator Tusingwire Hilary – AASP Masanyu Justus- Sub county NAADs Coordinator Zatwoshaho James- Farmer	• The climbing beans are predominant here as compared to the bush beans because of their tolerance to diseases **Challenges faced by farmers**; - Lack of quality seed; there is limited access to improved varieties of seeds - Poor management skill by farmers, for example, intercropping beans with peas - Declining soil fertility - Technology adoption by farmers is still very low, they tae long to take on new things - High prices of the seed - Farming is subsistence and not mechanized due to the terrain - Declining soil fertility and therefore declining production and productivity - Weeding is done late at times hence the low productivity - Low application of Integrated Pest Management approach - Pests and diseases; Common ones include; ▪ Bean root rot (fungal) which also reduces soil fertility; ▪ Bean anthracnose ▪ Bean wilt ▪ Bean rosett (viral) ▪ Black aphids ▪ Green aphids ▪ Macro pests like rats which can clear a whole garden • Generally the use of agrochemicals in bean production is not encouraged in the district because of the likely residual effects of the chemicals. The use of fungicides has just started and the economics involved is being studied by the farmers. Insecticides like agrothoate are commonly used to control aphids. • Surveillance and monitoring of diseases is by the extension workers who routinely report to the district. Cases of unknown diseases are taken to the nearest NARO laboratory at Kachwekano research Centre. However, this laboratory is also poorly equipped and under staffed. • Framers are encouraged to improve soil fertility with manure; • Integrated pest Management is not so pronounced in the district, but some farmers growing climbing beans intentionally release chicken into bean gardens to pick the aphids, moths and butterflies.

	• Post-harvest handling is still a big challenge to farmers. Some farmers shell their beans right in the gardens and on bear ground. A lot of beans are left in gardens as result of this method of shelling. • Because of the terrain, farmers who opt to move their beans home carry them on their heads, in the process losing a considerable amount between the garden and home. • While at home, the unshelled beans are kept and dried on bear grounds, a few farmers who can afford dry their beans on turplines. Solar driers are highly recommended. • Farmers don't have proper storage facilities; beans are kept their houses in baskets, bags, other on the flour. If possible, cylons should be constructed for farmers who in groups. Such cylons should be centrally placed so that all farmers can easily access them, store and keep record of the quantities stored. These same groups can later on look for better markets for their produce. Such an arrangement will also encourage farmers to start sorting their beans. Currently few farmers go through the rigor of sorting. • Involvement by gender - Men own the land - Women do more of the tilling, land preparation disease and pest management, harvesting, and winnowing. - The males do carry the harvested beans to the homes and also do the selling. **Recommendations** • Enhance soil management practices; extension staff should be equipped with simple soil testing kits so that the y advise farmers from an informed point of view; • Training of staff and farmers in soil and water conservation; • Metrology department should avail correct information/right predictions of the rains so that farmers are advised to plant at the right time; • Training of farmers in and staff in minimizing post-harvest losses; • Establish storage facilities near to farmers, where their can collectively store and market their produce.