Environmental and Social Management Framework (ESMF)

Project Title: Strengthening the Adaptive Capacity and Resilience of Communities in Uganda's watersheds - Awoja Catchment (SACRiAC)			
Country(ies):	Uganda	GEF Project ID:	10203
GEF Agency(ies):	AfDB	GEF Agency Project ID:	
Project Executing Entity(s):	Ministry of Water and Environment	Submission Date:	
GEF Focal Area (s):	Climate Change	Expected Implementation Start	
		Expected Completion Date	
Name of Parent Program	[if applicable]	Parent Program ID:	

Summary

The Government of the Republic of Uganda has received financing from the Global Environment Facility (GEF) for the development of the "Strengthening the Adaptive Capacity and Resilience of Communities in Uganda's watersheds" project. The project aims to strengthen resilience of approximately half a million vulnerable people to the impacts of climate change, through adaptation technology transfer (strategic objective 1) and climate mainstreaming (strategic objective 2). This project has four components, namely: 1) Climate resilient infrastructure implemented for enhanced livelihoods, 2) Strengthened capacity of communities and institutions for climate resilient planning in four watersheds, 3) Climate information integrated into development plans & early warning systems, and 4) Monitoring and Evaluation (M&E) and Adaptation Learning. The project will be implemented in the sub-catchments of Komirya, Sironko, Simu-sisi, Muyembe and Sipi (in the districts of Bukedea, Sironko, Bulambuli and Kapchorwa) within the Awoja catchment.

The purpose of this ESMF is to set out a unified process for assessing and managing all environmental and social safeguard issues for subprojects from preparation, through appraisal and approval, to implementation. The ESMF gives information on how to address adverse environmental and social impacts of components of the project and will be applied in sub-projects. The preparation of this ESMF has mainly been based on a review of the relevant project documents, legal and lender requirements and secondary information about the Project area. In addition, consultations with the relevant stakeholders at the Ministry of Water and Environment (MWE) were conducted to further understand available capacity to implement the ESMF.

The proposed Project is commendable as it aims at strengthening the adaptive capacity of the target area to climate change impacts. However, due to the already experienced climate and climate change risks in the area as well as the continuously increasing population which has continued to influence land use activities; for example, conversion of wetlands to rice farms, proper planning and implementation is required to avoid execrating environmental and social impacts.

The scope and nature of works to be undertaken under the project was assessed and it is expected that the project will generate a number of positive environmental and socio-economic impacts; however, there will also be some negative environmental and socio-economic impacts. The identified potential negative impacts can be easily avoided or mitigated through implementation of appropriate management/mitigation measures. Given the identified potential impacts and the fact that the details of the specific projects are not yet fully defined, the environmental and social risks of the Project falls in Category 2 of the AfDB's Integrated Safeguard System (ISS).

Uganda's National Environment Act (2019) categorizes projects based on their environmental and social risks. The sub-projects in the project are not yet fully defined (although broadly identified) and may fall in different categories. For policies, plans and projects which are likely to have a significant impact on human health or the environment, the Ugandan National Environment Act (2019) requires the conduct of a Strategic Environmental Assessment (SEA) to further understand and guide on the management of associated environmental impacts.

This is consistent with the AfDB's requirements where a Strategic Environmental and Social Impact Assessment (SESA) is required for Category 1 and Category 2 projects. Depending on the outcomes of the SEA/SESA, ESIAs and Project Briefs might be required for specific projects; however, it is most likely that some of the projects will be exempted from further environmental assessments.

1 Contents

1. Introduction

1.1. Project Background

The Government of the Republic of Uganda has received financing from the Global Environment Facility (GEF) for the development of the "Strengthening the Adaptive Capacity and Resilience of Communities in Uganda's watersheds – Awoja Catchment (SACRiAC)" project. The project is well-aligned with the GEF-7's LDCF1 programming strategy and Uganda's National Adaptation Programme of Action (NAPA) and National Development Plan (NDP). It aims to strengthen resilience of approximately half a million vulnerable people to the impacts of climate change, through adaptation technology transfer (strategic objective 1) and climate mainstreaming (strategic objective 2). The project will support integrated adaptation planning at watershed level, strengthen resilience of critical rural infrastructure, including riverbanks and wetlands, in order to support sustainable agriculture and alternative livelihoods; as well as enhancing access to reliable climate and weather information for climate change integration in development programmes.

The roughly 9 million US$ LDCF project is expected to mobilize at least 80 million US$ of AfDB investment, which aims to strengthen the agriculture sector in Uganda. The LDCF will be a complementary and catalytic source of support in enhancing the effectiveness of the AfDB investment and utilize its scale to make the agriculture value chain and watersheds resilient to climate change. The project has a distinct focus on gender and will engage private sector in strengthening market linkages for agriculture and alternative livelihoods in the region. A strong buy-in is expected from the Ugandan government, as well as an effective implementation arrangement and an integrated project design.

The project is prioritized by the Ugandan government and subsequently revised to align with the GEF-7 strategy and national priorities, through consultations with the GEF Secretariat and other stakeholders.

1.2. Project Objectives

The project will be implemented in the sub-catchments of Komirya, Sironko, Simu-sisi, Muyembe and Sipi (in the districts of Bukedea, Sironko, Bulambuli and Kapchorwa) within the Awoja catchment. This project has four components, namely:

1. Climate resilient infrastructure implemented for enhanced livelihoods,
2. Strengthened capacity of communities and institutions for climate resilient planning in four watersheds,
3. Climate information integrated into development plans & early warning systems, and
4. Monitoring and Evaluation (M&E) and Adaptation Learning.

These are explained in Section 2 of this ESMF.

1.3. Purpose and Principles of the ESMF

The purpose of this ESMF is to set out a unified process for assessing and managing all environmental and social safeguard issues for subprojects from preparation, through appraisal and approval, to implementation.

The specific objectives of the ESMF are:

- Establishing clear procedures and methodologies for the environmental and social assessment, review, approval and implementation of sub-projects to be financed under the project.
- Specifying appropriate roles and responsibilities, and outlining the necessary reporting procedures for managing and monitoring environmental and social risks related to subprojects.
- Determining the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF.
- Establishing project funding required to implement the ESMF requirements.

- Providing lessons learned for application to future projects.

1.4. Scope of the ESMF

At the time of preparing this ESMF, the sub-projects were not yet defined and thus a detailed environmental and social assessment was not possible. Therefore, this ESMF focused on a high level environmental and social analysis of the project. The ESMF gives information on how to address adverse environmental and social impacts of components of the project and will be applied in sub-projects. Once the specific sub-projects have been defined and designed, necessary subsequent environmental and social assessments shall be conducted for each of the sub-projects per the requirements of the applicable national laws and regulations, and in particular making reference to the relevant Schedules of the National Environment Act No. 5 of 2019. The implementation agency) shall ensure that the project implementation observes the requirements of the Environmental and Social Management and Monitoring Plans to be developed in details as part of the sub-project specific environmental and social assessments.

1.5. Approach and Methodology of the ESMF

The preparation of this ESMF has mainly been based on a review of the relevant project documents, legal and lender requirements and secondary information about the Project area. In addition, consultations with the relevant stakeholders, including Central and Local Government Authorities, private sector agencies, and NGOs including development partners were conducted to further understand available capacity to implement the ESMF. At Central Government level, consultations were held with the Ministry of Water and Environment (MWE) and relevant affiliated agencies including the National Forestry Authority (NFA) and the Uganda National Meteorological Authority (UNMA).

Guided by information obtained from the above, the following was undertaken:

- Identification and analysis of potential environmental and social impacts the project sub-projects are likely to trigger and generate within and around the project areas;
- Development of the appropriate screening process for the proposed project's sub-projects;
- Identification of appropriate mitigation measures for the likely potential environmental and social impacts of the project; and
- Compilation of Environmental and Social Management and Monitoring Plans for addressing the impacts during project implementation.

2. Description of Project Operation

The overall goal of Strengthening the Adaptive Capacity and Resilience of Communities in Uganda's watersheds – Awoja Catchment (SACRiAC)" project is to contribute to poverty reduction and economic growth in the project area through enhanced climate infrastructure development and natural resource protection. The project objective is to build adaptive capacity of rural communities and reduce their vulnerability to climate change and improve rural livelihoods, and food security through integrated watershed management, climate-resilient infrastructure and sustainable agriculture. The project will be implemented in the sub-catchments of Komirya, Sironko, Simu-sisi, Muyembe and Sipi (in the districts of Bukedea, Sironko, Bulambuli and Kapchorwa) within the Awoja catchment.

2.1. Project Components

This project has four components, namely:

1. Climate resilient infrastructure implemented for enhanced livelihoods,
2. Strengthened capacity of communities and institutions for climate resilient planning in four watersheds,
3. Climate information integrated into development plans & early warning systems, and
4. Monitoring and Evaluation (M&E) and Adaptation Learning.

2.1.1 Component 1: Climate-resilient infrastructure implemented for enhanced livelihood

The intended outcomes of Component One are: 1) Climate-resilient watershed management practices that reduce the vulnerability of local communities and physical assets and natural systems, 2) Reduced risk of river flooding results in increased resilience of local communities, and 3) Increased climate resilience through improved water access. Activities for Component One include:

- Afforestation and reforestation of an estimated 2,500 hectares of forest land with assistance to farmer groups to apply forestry practices within their land and financing campaigns to plant forest trees in communal and private woodlots, schools, and along roadsides;
- Community support for agroforestry practices to an estimated 3,000 hectares focussing on rehabilitation and erosion control at degraded sites);
- Community support for conservation agriculture for an estimated 3,500 hectares in selected degraded areas for example through contour ridging, restoration of traditional terrace systems, and use of vetiver grass to reinforce marker ridges in the mountainous parts of the project area;
- Supporting alternative livelihoods (e.g., fish farm integrated units, fruit orchards, honey production) to promote sustainable wetland/watershed management, sustainable resource management and restoration, with a special focus on women and unemployed youth;
- Protecting or restoring an estimated 25 km (cumulative) of riverbank, including small-scale flood reduction infrastructure in selected areas, to improve water drainage and reduce the risk of flood-induced damages;
- Construction of climate-resilient community water supply systems in rural areas focusing on unserved areas (including interventions to increase access to safe water supply to an estimated 25,000 people in rural areas in the five watersheds);
- Designing and building climate-resilient community-based water harvesting, storage and distribution systems (e.g., valley tanks/small earth dams to a capacity of 300,000 m^3), based on projected changes in rainfall patterns and intensity, to provide water supply for an estimated 28,000 livestock in the watersheds; and
- Providing 20 community rainwater harvesting tanks for communal use, and appropriate capacity building in the maintenance and use of the technology.

2.1.2 Component 2: Strengthened capacity of communities and institutions for climate resilient planning in five watersheds

The intended outcomes of Component Two are: 1) Strengthened capacity of communities to implement measures for wetland and watershed management for increased climate resilience, and 2) Strengthened institutional and planning capacity for wetland management. Activities for Component Two include:

- Producing one watershed level climate-resilient action plan for the upper reaches of river Sironko, revising the two existing watershed-level plans (Sipi and lake Okolirotom) to mainstream climate change resilience, and developing at least three village-level climate resilience action plans (CRAPs) developed per watershed, ensuring that all the plans are engendered;
- Undertaking capacity building for community-driven wetlands and riverbank management, climate change adaptation and mitigation, and forest management;
- Community awareness for reforestation, forest management, riverbank and wetland management, and soil conservation;
- Technical advice and support to local governments (district and sub-county level) and sub-catchment and micro catchment management committees in the integration of climate resilience into development plans; and
- Preparing and implementing Wetlands Management Plans for at least three hotspot wetlands identified in a participatory process involving local communities, their leaders, and relevant de-concentrated structures of the central government at the regional level, especially the regional office of the Department of Environment Affairs.

2.1.3 Component 3 - Climate information integrated into development plans and early warning systems

The intended outcomes of Component Three are: 1) Improved access to climate information and early-warning systems at national, watershed and local levels, and 2) Efficient and effective use of hydro-meteorological and environmental information for making early warnings. Activities for Component Three include:

- Expansion of weather and climate observing network through installation of at least 10 meteorological monitoring stations with telemetry, archiving and data processing facilities;
- Expansion of hydrological network through installation of at least 10 hydrological monitoring stations with telemetry, archiving and data processing facilities;
- Development of strategy for scaling up the climate and weather information systems, and enhancement of hydro-meteorological station Operation and Maintenance in the long term;
- Development and installation of a flood early warning and response system linked to the existing Awoja catchment mike hydro model and using real time hydromet data as well as community-based information and communication systems;
- Development, packaging and dissemination of weather and climate information for sensitizing vulnerable communities on weather and climate information use; and
- Strengthening the human capacity in weather observing, forecasting and information management, targeting gauge readers and gauging assistants, hydrological assistants; meteorological observers, volunteers and technicians/engineers; professional officers (hydrologist, meteorologist, instrumentation specialists, etc.)

2.1.4 Component 4 - M & E and Adaptation Learning

The intended outcomes of Component Four are: 1) Lessons learned and best practices from pilot activities, capacity development initiatives and policy changes are disseminated, and 2) M&E aptly pursued, and lessons captured and widely disseminated. Activities for Component Four include:

- Developing and operationalising a knowledge-based M & E system for the project;
- Development and dissemination of knowledge and learning materials on climate change, rural infrastructure and ecosystem management through existing networks and platforms; and
- Compilation of project good practices and lessons learned documented and disseminated to raise awareness on effective adaptive management options for further up-scaling.

3. Policy, Legal and Administrative Framework

3.1 Relevant National Policies

Uganda's main policy in regards to environmental management is the National Environment Management Policy, 2014. The overall goal of this policy is to attain sustainable development which maintains and promotes environmental quality and resource productivity for socio-economic transformation. It is built on eight key principles of:

- A clean, safe and productive environment;
- A robust natural resource and environment management regime;
- Improved productivity of our natural resource base;
- Optimum utilization of renewable and non-renewable resources;
- Total economic value of environmental costs and benefits;
- Social inclusion and equity;
- International and regional cooperation; and
- Total compliance with enforcement and regulatory frameworks.

This policy recognizes that creating an integrated and multi-sectoral systems approach to planning and management resources and the environment is fundamental to sustainable socio-economic development and in order to achieve this, policies that address cross-sectoral environmental management issues are needed. For this project, the policies outlined below are considered to be relevant:

- The Environment and Social Safeguards Policy, 2018;
- The National Climate Change Policy, 2015;
- The National Policy for the Conservation and Management of Wetland Resources, 1995;
- The National Agriculture Policy, 2013;
- The Uganda Forestry Policy, 2001;
- The National Irrigation Policy, 2017;
- The National Land Policy, 2013; and
- The Draft National Energy Policy, 2019.

3.2 National Legal Requirements

The Constitution of Uganda, 1995 is the supreme law in the country. Consistent with the constitution, the Parliament of Uganda has enacted a number of Acts especially to address specific issues in different sectors and collectively, all these constitute the National laws. Particularly for environmental management and related issues, the National Environment Act, 2019 is main specific law. To attain appropriate environmental management, this Act provides for the management of the environment for sustainable development; continues the presence and functions of the National Environment Management Authority (NEMA) as a coordinating, monitoring, regulatory and supervisory body for all activities relating to environment; provides for emerging environmental issues including climate change, the management of hazardous chemicals and biodiversity offsets; strategic environmental assessment; addresses environmental concerns arising out of petroleum activities and midstream operations, provides for the management of plastics and plastic products; establishes the Environmental Protection Force; provides for enhanced penalties for offences under the Act; provides for procedural and administrative matters; and for related matters.

Section 48(1) of this Act requires lead agencies to ensure that ensure that environmental considerations are an integral part of land use plans. Section 49(1) further states that "a developer of a project listed in Schedule 4 or 5 (of the Act) shall establish, maintain and implement an environment management system in a manner prescribed by regulations. The relevant regulations emanating from this Act include:

- The National Environment (Strategic Environmental Assessment) Regulations, 2020;
- The National Environment (Waste Management) Regulations, 2020;
- The National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2020;
- The National Environment (Audit) Regulations, 2020;
- The Environmental Impact Assessment Regulation, S.I. No. 13/1998 (this is in the process of being revised to The National Environment (Environmental and Social Assessment) Regulations, 2020);
- The National Environment (Minimum Standards for Management of Soil Quality) Regulations, 2001;
- The National Environment (Hilly and Mountainous Area Management) Regulations, 2000;
- The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, No. 3/2000; and
- The Water Resources Regulations, 1998.

In addition to the National Environment Act, outlined below are other National Acts relevant to the project:

- The National Forestry and Tree Planting Act, 2003;
- The Land Act, Cap 227 and the Land Amendment Act, 2010;
- The Plant Protection Act, Cap 31, 1937;
- The Control of Agricultural Chemicals Act, Cap 28, 1994;
- The Fish Act, Cap 197, 1951;
- The Occupational Safety and Health Act, 2006;
- The Water Act Cap 152
- The Public Health Act, Cap 281;
- The Local Governments Act, Cap 243 (and the amendments of 2017)

3.3 Relevant Plans

3.3.1 Awoja Catchment Management Plan

This is the main guiding document for the management of Awoja Catchment in which the project will be implemented. It aims at enabling sustainable management and utilization of the water resources and related sources of Awoja Catchment through achievement of the following specific objectives:

- Catchment protection and conservation
  - Sustainable land and environmental management,
  - Reforestation,
  - Lakes and wetlands management, and
  - Buffer zone set-asides.
- Development for socio-economic growth
  - Sanitation systems,
  - Refurbishment of infrastructure,
  - Piped water schemes (surface water),
  - Groundwater development,
  - Rainwater harvesting (roof water tanks and roof catchments),
  - Sand dams,
  - Dams (small stock watering dams, valley dams and tanks, large dams),
  - Enhancement of irrigation,
  - Water use efficiency,
  - Small hydropower,
  - Alternative energy supply,
  - Aquaculture, and

  - Socio-economic strengthening
- Mitigation and adaptation
  - Flood management and preparedness for floods,
  - Construction of infrastructure for flood control, and
  - Cattle keeping practices
- Social and institutional development.
  - Monitoring,
  - Extension services (information and training),
  - Awareness raising,
  - Institutional capacity building, and
  - Legislation and enforcement

The project proposes implementation of a number of projects described in Chapters 2 of this ESMF that will significantly contribute towards achievement of the above objectives in the target and overall implementation of the Awoja Catchment Management Plan.

3.4 Good Industry Practice and Lender Requirements

3.4.1 Global Environment Facility's Policy on Environmental and Social Sustainability, December 2018

This Policy sets out mandatory requirements for identifying and addressing Environmental and Social Risks and Impacts in Global Environment Facility (GEF)-financed projects and programs; and for documenting, monitoring, and reporting on associated measures throughout the project and program cycles, and at the portfolio level. It describes a set of minimum standards outlined below:

- **Minimum Standard 1**: Environmental and Social Assessment, Management and Monitoring;
- **Minimum Standard 2**: Accountability, Grievance and Conflict Resolution;
- **Minimum Standard 3**: Biodiversity Conservation and the Sustainable Management of Living Natural Resources;
- **Minimum Standard 4**: Restrictions on Land Use and Involuntary Resettlement;
- **Minimum Standard 5**: Indigenous Peoples;
- **Minimum Standard 6**: Cultural Heritage;
- **Minimum Standard 7**: Resource Efficiency and Pollution Prevention;
- **Minimum Standard 8**: Labor and Working Conditions; and
- **Minimum Standard 9**: Community Health, Safety and Security.

They are applicable to all projects and programs submitted for GEF financing. Agencies seeking GEF's financing are required to demonstrate that they have in place the necessary policies, procedures, systems and capabilities to meet the minimum standards. They are also required to ensure that the minimum standards are met at all levels of project and program implementation, including by executing partners.

3.4.2 African Development Bank Group's Integrated Safeguards System, December 2013

The African Development Bank (AfDB) Group's Integrated Safeguards System (ISS) were published in December, 2013. The ISS outlines the AfDB's strategy to promote growth that is both environmentally sustainable and socially inclusive. This strategy has a set of five operational safeguards that guide the AfDB's assessment and management of environmental and social impacts associated with the projects of its borrowers as outlined below.

- **Operational Safeguard 1**: Environmental and Social Assessment;

- **Operational Safeguard 2**: Involuntary Resettlement, Land Acquisition, Population Displacement and Compensation;
- **Operational Safeguard 3**: Biodiversity and Ecosystem Services;
- **Operational Safeguard 4**: Pollution Prevention and Control, Hazardous Materials and Resource Efficiency; and
- **Operational Safeguard 5**: Labour Conditions, Health and Safety.

The AfDB requires that all borrowers/clients comply with the ISS requirements during all project preparation and implementation processes.

3.4.3 Project Environmental and Social Categorisation

The categorization of the project's environmental and social risks and impacts was guided by the AfDB's policy requirements and the relevant Ugandan legal framework.

As described in Chapter 2 of this ESMF, the project is designed to strengthen the adaptive capacity and resilience of communities in Uganda's Awoja catchment, particularly in the sub catchments of Komirya (Bukedea district), Sironko (Sironko district), Simu-sisi and Muyembe (Bulambuli district) and Sipi (Kapchorwa district).

The scope and nature of works to be undertaken under the project was assessed and it is expected that project will generate a number of positive environmental and socio-economic impacts; however, there will also be some negative environmental and socio-economic impacts. The identified potential negative impacts described in Chapter **Error! Reference source not found.** of this ESMF can be easily avoided or mitigated through implementation of appropriate management/mitigation measures described in Chapter **Error! Reference source not found.** of this ESMF. Given the identified potential impacts and the fact that the locations/details of the specific sub-projects is not yet fully defined, the environmental and social risks of the project falls in Category 2 of the AfDB's Integrated Safeguard System (ISS).

Uganda's National Environment Act (2019) categorises projects based on their environmental and social risks as follows:

- Projects or activities exempted from environment assessments. In principle these are expected to be very low risk projects with insignificant environmental and social impacts.
- Projects for which Projects Briefs are to be submitted to the lead agency. Typically, these are low risk projects whose impacts can easily be identified and implemented.
- Projects for which Project Briefs are to be submitted to the authority. Typically, these are medium risk projects.
- Projects for which ESIAs are mandatory. Typically, these are high risk projects that must undergo a full ESIA process.
- Projects which may require ESIA. Typically, these are similar to high risk projects.

The sub-projects in the project are not yet fully defined (although broadly identified) and may fall in different categories. Once the specific sub-projects have been defined and designed, necessary subsequent environmental and social assessments shall be conducted for each of the sub-projects per the requirements of the applicable national laws and regulations, and in particular making reference to the relevant Schedules of the National Environment Act No. 5 of 2019 (particularly, Schedules 4, 5 and 6).

4. Environmental and Social Baseline Information at the National and Regional Level

4.1. Overview

The Awoja catchment is one of the 11 catchments within the Lake Kyoga Water Management Zone located in Eastern Uganda (Figure 4.1). The catchment has an area of approximately 11,000 km^2 covering 14 districts (four districts wholly covered while ten districts are partially covered). The Districts that are wholly covered by the catchment are Bulambuli, Kween, Kapchorwa and Sironko while the districts that are partially covered are Amudat, Katakwi, Kumi, Bukwo, Nakapiripiriti, Napak, Ngora, Serere, Bukedea and Soroti. The SACRiAC project area covers large parts of the districts of Bukedea and Sironko and partly the districts of Bulambuli and Kapchorwa (Figure 4.1 and Figure 4.2).

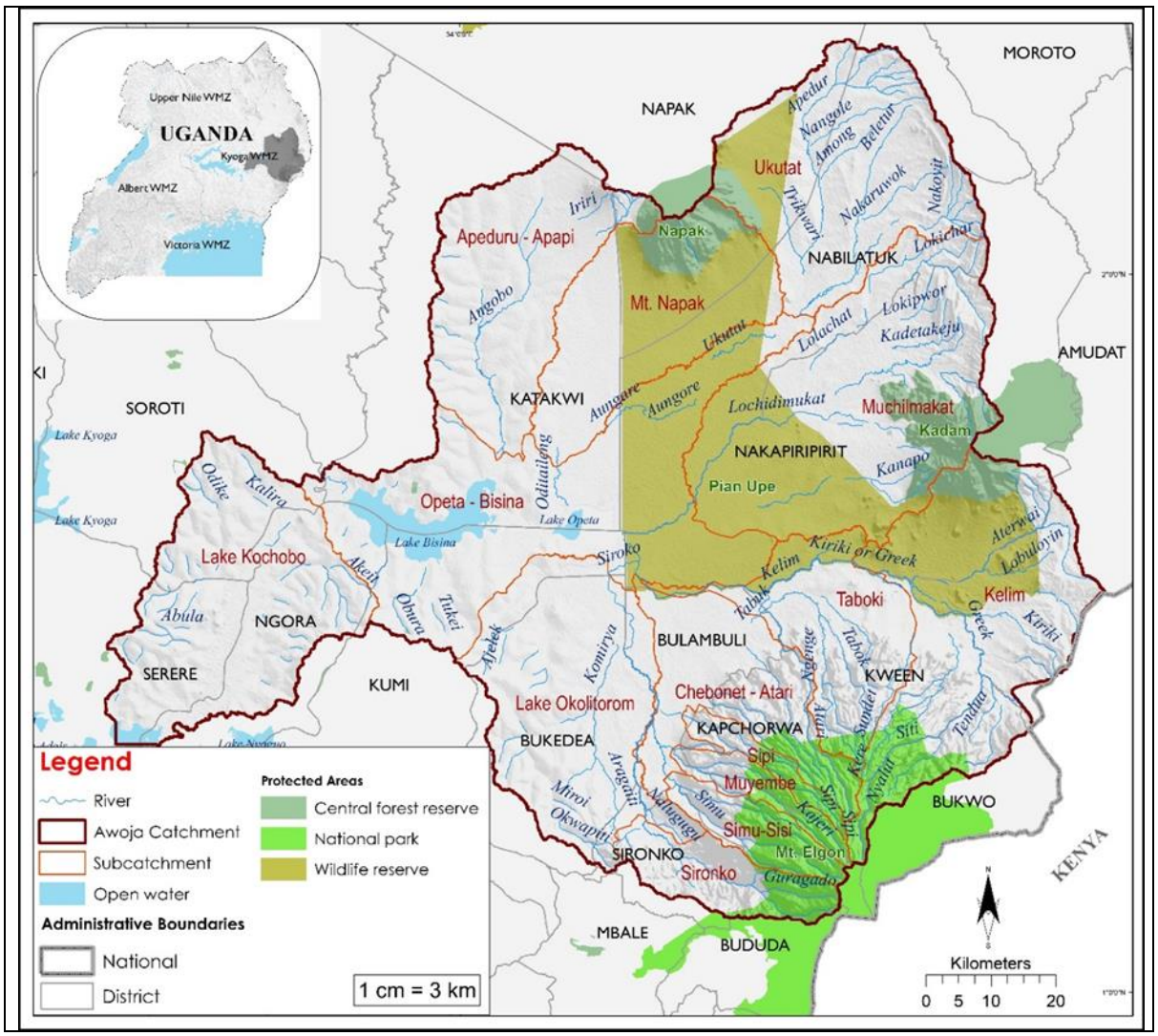

Figure 4.1 Location of Awoja Catchment

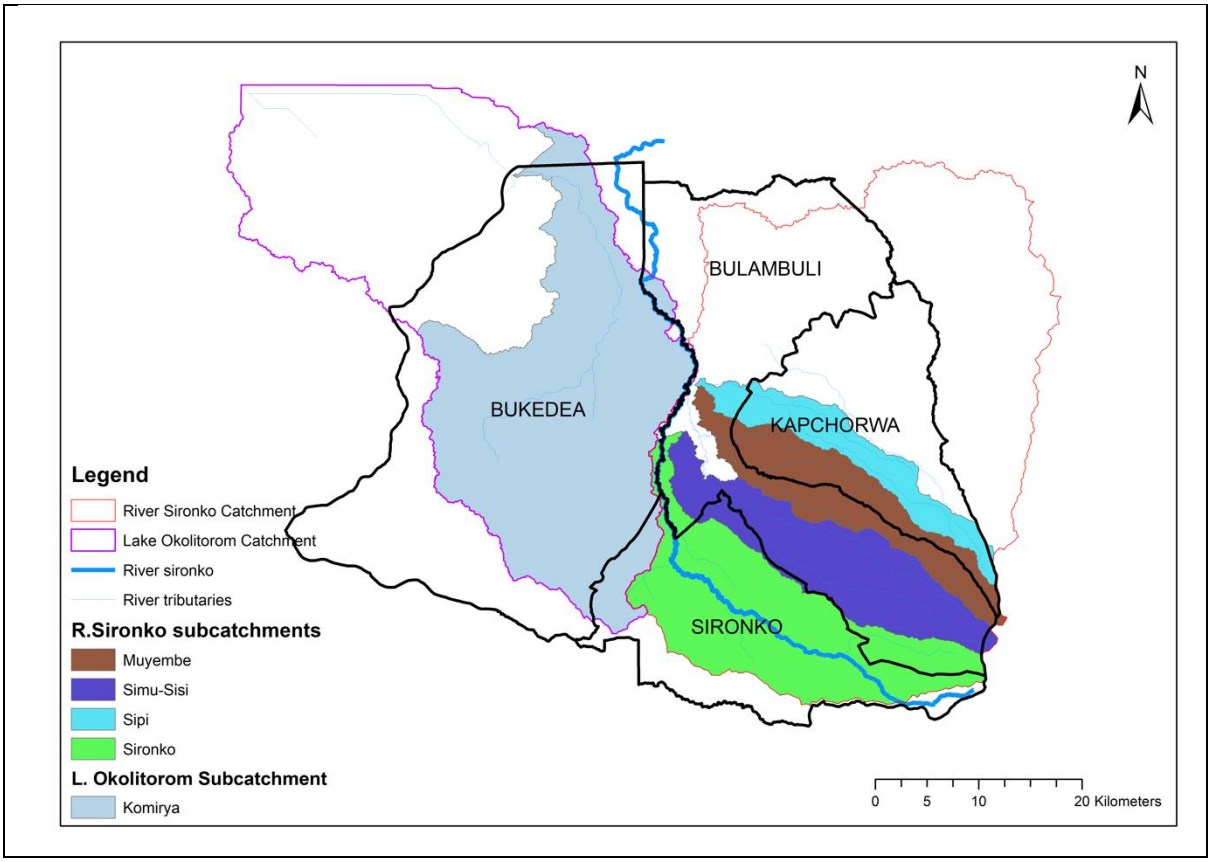

Figure 4.2 Project area (Komirya, Sironko, Simu-Sisi, Muyembe and Sipi sub catchments)

Data obtained from satellite imagery indicate that in the last ten years, the coverage under tropical high forest, woodland and open water within the Awoja Catchment has generally remained constant; however, there has been considerable reduction in the coverage of bushland, wetland and grassland (Table 4.1 and Figure 4.3). The coverage of subsistence farmland, commercial farmland and settlement/built-up areas within the Awoja Catchment has considerably increased in the last ten years. This has a great impact on the intensity and extent of climate change impacts as well as effectiveness of adaptation measures.

Table 4.1 Land use/cover changes for Awoja catchment for 2010 and 2020 period

LAND USE/COVER TYPES	Coverage				
	2010 (km^2)	%	2020 (km^2)	%	2010-2020 Change (km^2)
Tropical High Forest	19.11	0.22	19.11	0.22	0.00
Woodland	677.79	7.94	675.28	7.91	2.51
Bushland	934.60	10.95	714.33	8.37	220.28
Wetland	513.61	6.02	453.37	5.31	60.23
Grassland	3,703.85	43.38	3,495.12	40.94	208.73
Subsistence farmland	2,400.78	28.12	2,808.28	32.89	-407.50
Commercial farmland	43.52	0.51	77.98	0.91	-34.47
Open water	160.37	1.88	160.37	1.88	0.00
Settlement/Built-up	83.64	0.98	133.41	1.56	-49.78
Grand Total	**8,537.27**	**100.00**	**8,537.27**	**100.00**	**0.00**

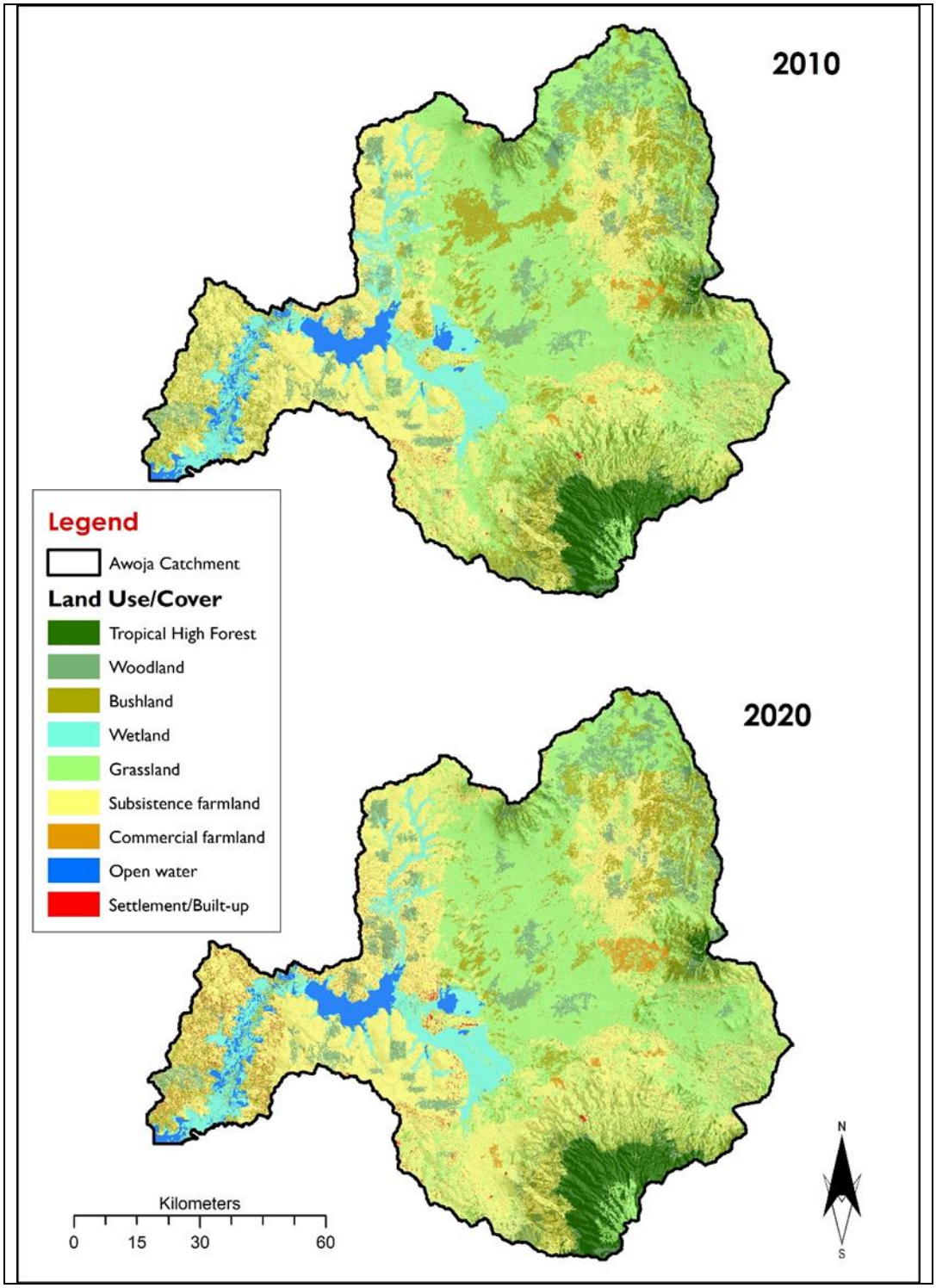

Figure 4.3 Land use/cover changes for Awoja catchment for 2010 and 2020 period

Much of the Awoja Catchment lies at an altitude ranging from 940 to 1,000 metres above sea level (m.a.s.l) with the upland hilly areas rising to 1,400 m.a.s.l and the highest mountains at over 3,000 m.a.s.l. In Particular, Mount Elgon at the southern edge of the catchment has the highest peak in the area with an elevation of 4,321 m.a.s.l. The topography and geomorphology of the districts of Sironko, Kapchorwa and Bulambuli are largely influenced by the Mount Elgon and are thus generally hilly with steep slopes, valleys and radial drainage with Sipi being the main river and a number of other rivers and stream flowing Northwards from Mt. Elgon. On the other hand, Bukedea District lies in the plains of Teso sub-region, i.e., generally flat with few undulations, and pierced by isolated inselbergs that modify the micro-climate and contribute to soil fertility due to their volcanic origins.

Similar to Mountain Elgon, the inselbergs in Bukedea district are a good resource for stone mining for the construction industry, are biodiverse and have caves which are attractive to tourists.

4.2. Physical Environment

4.2.1 Climate

4.2.1.1 Climatic Conditions

The climate of Awoja catchment is influenced by its variations in altitude particularly Mount Elgon. The climatic annual patterns are dominated by rainfall. Therefore, much of the catchment is well watered and can support rain-fed agriculture, although seasonality varies across sub catchments and seasonal droughts are a common feature (Awoja Catchment Management Plan, 2015). The main dry season in the Awoja catchment is from December to February. The mean annual rainfall is 1,103 mm but this is not evenly spread. This climate and associated risks influence land productivity and will need to be factored in the design and implementation of the project activities.

Due to their location in the Mount Elgon area (generally hilly), the districts of Siroko, Bulambuli and Kapchorwa are very prone to landslides. Landslides mostly occur in 11 sub-counties and these include Zesui, Buginyanya, Bumasifwa, Buluganya, Masila, Bulago, Buyobo, Buwalasi, Butandiga, Busulani and Sisiyi. In Sironko district, Zesui area is most affected while in Bulambuli district, Namusuni and Lusya are the area's most prone to landslides. For example, in the night of 29th to 30th August 2011, landslides devastated parts of Sisiyi and Buluganya sub counties killing 26 people. It was also reported that some four people were swept down by flash floods making the number of the dead 30. On the 3rd June 2012, a landslide occurred in Bumasifa in Sironko District destroying 7 houses and killed two people. In addition, a landslide claimed another 7 people in Masaba Sub county, Sironko District in August 2017 (Figure 4.4). On the other hand, Bukedea district, located in the plains at the foot of the mountain, is prone to flooding during the rainy season due to increased runoff from the mountain slopes.

Figure 4.4 People in search of missing bodies believed to be covered by the landslide in Sironko District in August 2017

Source: New Vision, 29th August 2017

4.2.1.2 Climate Change

Available literature shows that since 1951, there has been a significant increase in Uganda's temperature, ranging from 0.5-1.2^{o}C (Climate Change Profile for Uganda, 2015). The magnitude of observed warming,

especially since the early 1980s is large and unprecedented within the past 110 years, representing a large deviation from the climate norm. Global projections downscaled to Uganda for the 2015-2045 period indicate that there may be an increase in precipitation during December, January and February, which has historically been the dry season across the country. Some models predict large variations across the country, with significant increases in rainfall in the north of the country and a decrease in the southeast. The warming trend is projected to continue with some models projecting an increase of more than 2^{o}C by 2030.

There is a potential for an increase in the frequency of extreme events (heavy rainstorms, flooding, droughts, landslides, etc.). Uganda has experienced an increase in the frequency and intensity of droughts and floods in recent years. The percentage of rainfall coming in the form of heavy precipitation events is anticipated to increase, which would escalate the risk of disasters such as floods and landslides.

The impacts of climate change will most likely include:

- Increased food insecurity;
- Shifts in areas affected and increased incidence in some areas of diseases, such as dengue fever, malaria and water borne diseases associated with floods;
- Elevated rates of erosion and land degradation because of increased mean rainfall or higher intensity events;
- Greater risks of flood damage to infrastructure, property and settlements;
- Shifts in the viable area for agriculture production such as coffee and maize with increased temperature;
- Reduction in grazing potential within the cattle corridor;
- Biodiversity loss and extinctions as niches are closed out by temperature increases and pressure on natural resources; and
- Implications for lakes and rivers, mainly, Lake Victoria levels and Nile flows.

The temperatures in the project area are not felt as it was in the early 70s which used to be generally misty/cloudy throughout the rainy season. Possibly due to the effects of the climate change, temperatures have changed and mist is not frequent with warmer temperatures experienced.

Generally, landslides and flooding are becoming common occurrences in the Mount Elgon region. Governments and communities need to prepare to either adapt to or mitigate these impacts, or mitigate and adapt to the residual impacts. The current and future planning (including the proposed project) need to consider/ incorporate the foreseen climate change impacts.

4.2.3 Geology and Soils

4.2.3.1 Geology

Most geological formations in Awoja catchment originate from Precambrian supereon. The western part of the catchment which includes Bukedea and the neighboring districts of Sironko, Kapchorwa and Bulambuli is dominated by Gneiss-Granulite complex with some quaternary sediments. Other major geologogical features in the wider Awoja catchment include alkali volcanic formations, the watian series and the Aruan series (Figure 4.5).

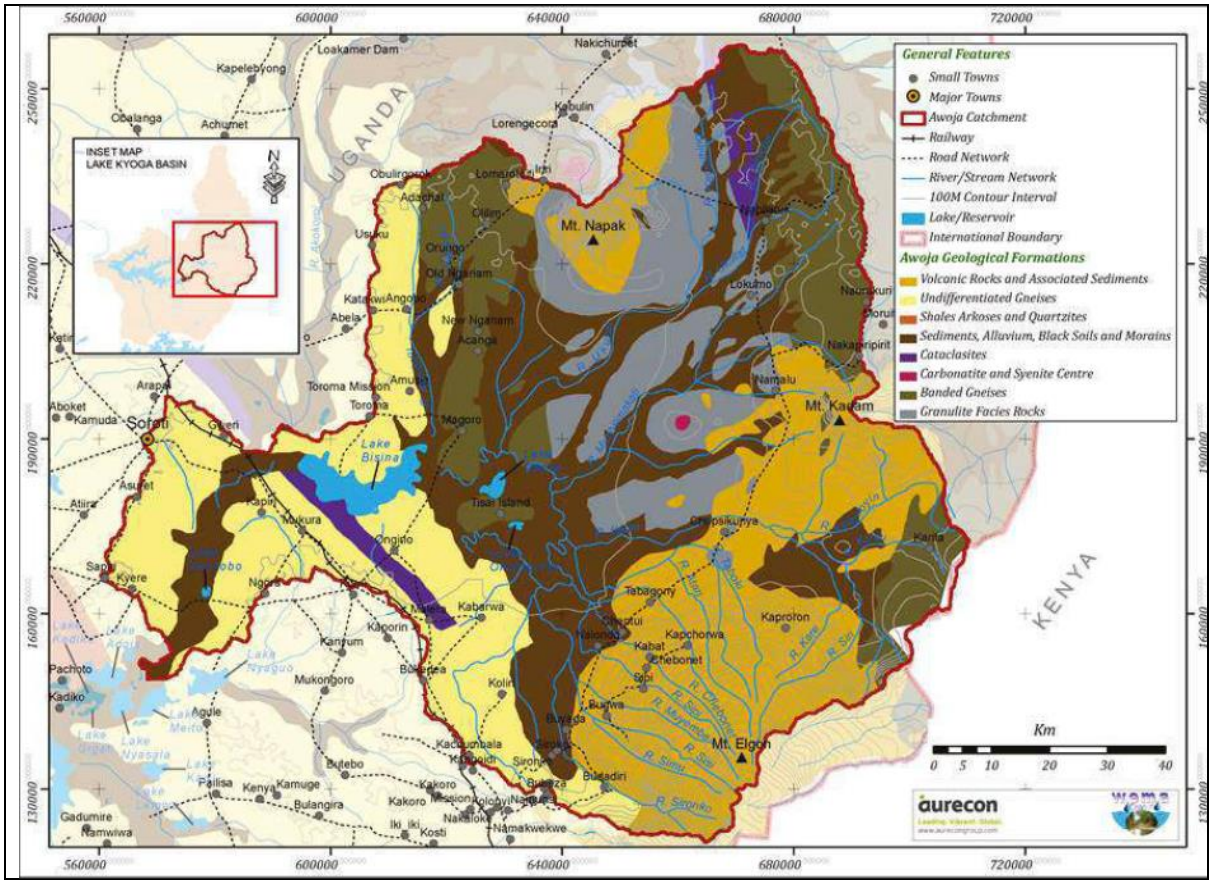

Figure 4.5 Geological Formations of Awoja Catchment

Source: Awoja Catchment Management Plan, Ministry of Water and Environment, 2015

In particular, Mount Elgon is underlain by Mesozoic and Cainozoic rocks comprising of mainly volcanics and sediments. They are generally soda-rich agglomerates, lavas and tuffs that have been extruded. Much as the rocks belong to ancient rock systems, volcanic intrusions have occurred leading to material flows forming sediments in valleys rich in volcanic ash. Due to prolonged exposure weathering of volcanic ash has occurred releasing rock fragments ranging from cobbles to massive boulders that either lie on the slopes or are embedded in soils.

4.2.3.2 Soils

Uganda's soils were considered to have a high natural fertility, but there has been a continual depreciation in plant nutrients with little systemic replacement which has resulted in the lowering of productivity in areas under continual cultivation. Generally, the soils of Awoja Catchment are characterized by high susceptibility to erosion, which is clearly visible in the high levels of silt carried in streams and sedimentation in wetlands and basins. The soils of the catchment are mapped in Figure 4.6.

The soils of Bukedea District are mainly sandy loam and associated with limited amounts of plant nutrients due to leaching, erosion, volatisation and poor farming practices. The soils have a coarse texture and are high in iron content which sometimes fixes nutrients such as phosphorous. Harsh environmental conditions have increased laterisation affecting the quality of the soils. In the east of the district, the soils are dark-heavy volcanic which are rich in mineral nutrients. In lowland/wetland areas, the soils are dark in colour and fairly fertile due to deposition of organic matter by run-off from upland areas. The soils in Sironko, Kapchorwa and Bulambuli are influenced by the Mount Elgon volcanic rocks. The Soils on the slopes of Mount Elgon are mainly classified as Acrisols, Ferralsols, Nitisols and Luvisols. On higher altitudes in the forest belt soils are brown to red-brown clay-loams, up to a meter or so deeper. Above 3,000m, however, shallow black humus soils predominate. These soils

are relatively young and fertile with high concentration of calcium, sodium, and potassium. Due to the good soil fertility, land use planning should incorporate arable farming whilst implementing appropriate measures to prevent landslides.

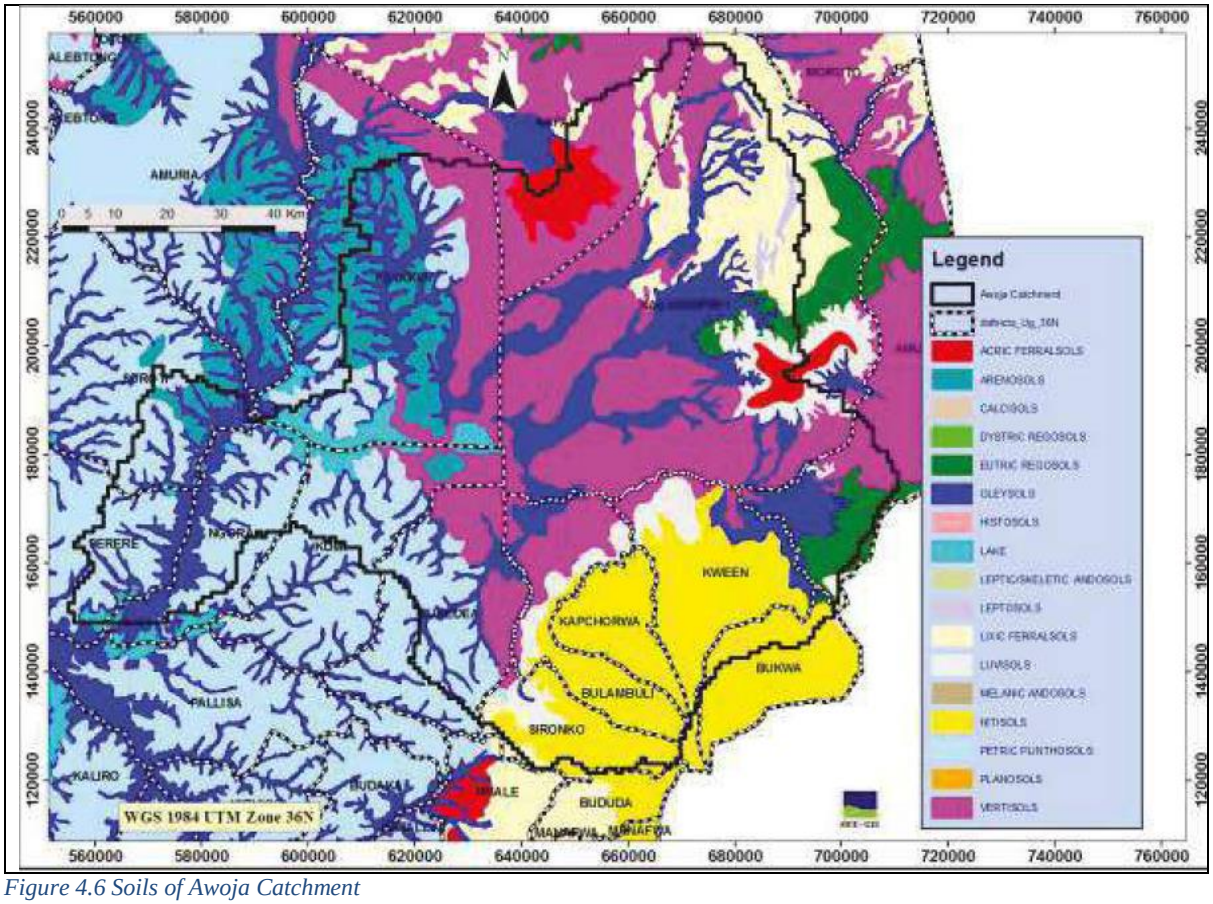

Figure 4.6 Soils of Awoja Catchment

Source: Awoja Catchment Management Plan, Ministry of Water and Environment, 2015

4.2.4 Hydrology

Generally, the rivers in Awoja Catchment and particularly, the project area, originate from Mount Elgon and generally flow northwards to the plains and eventually into the lakes (Figure 4.7). The main rivers in the Catchment include River Sironko, River Sirimityo, River Sipi, River Chebonet, River Cheptui, River Cheseber, River Kaptokwoi and River Atari and their tributaries. There are also several streams between them; some permanent and others seasonal. There are several protected springs and wells spread throughout the districts. These are also the main sources of domestic water.

There are also a number of wetlands in the region but their coverage has been shrinking mainly due to completion with farming especially rice growing (Section 4.1).

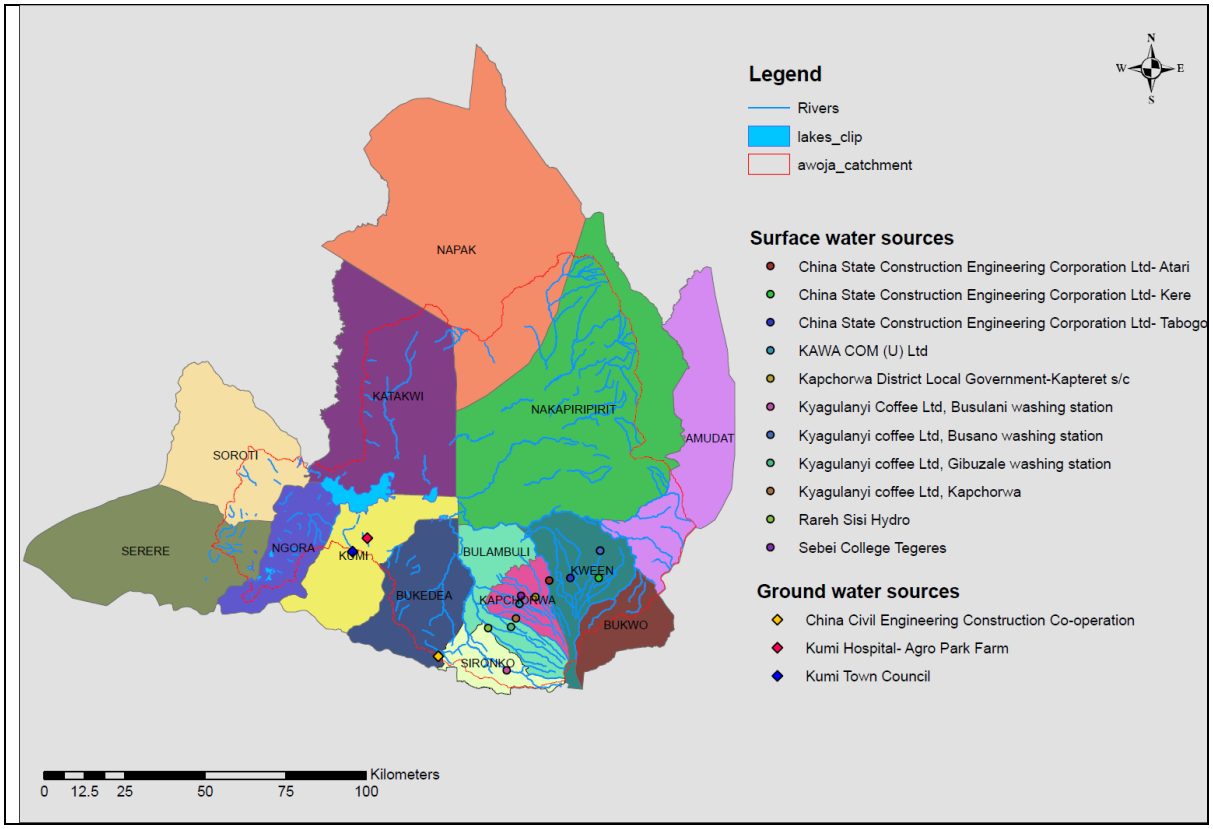

Figure 4.7 Water Resources in Awoja Catchment

4.2.5 Summary of Existing Physical Risks

- Climatic and climate change risks of hailstorms and lightning, seasonal droughts, floods and landslides;
- Plains prone to flooding;
- Soil Erosion and siltation and their potential impact on soil fertility and overall soil physical and chemical properties;
- The presence of numerous rivers and streams as well as lakes require that any land use planning has to put them into consideration to prevent any potential impacts of surface water pollution; and
- The increasing conversion of wetlands into farmlands.

4.3. Biological Environment

4.3.1 Vegetation Types

As already presented in Section 4.1, the main vegetation types in the Project area include tropical high forests, woodlands, bushlands, grasslands and wetlands. However, due to increased population, there is a progressive reduction in the extents of these vegetation types over the last ten years as more land is converted into farmland (both commercial and subsistence) and built-up areas/ settlements (2010 to 2020).

Bukedea District generally has Savannah grasslands with woodlands of low forest cover due to the population pressures and increasing demand for forest products within the district and town councils. Data from satellite imagery (2010 – 2020) indicates significant conversion of wetlands into subsistence and commercial farmlands within the Lake Okolitorom sub catchment which covers most of Bukedea District. Most of the hill-tops in Kapchorwa, Sironko and Bulambuli districts are forested. Particularly for Mount Elgon, mixed mountainous forests are found at altitude less than 2500 m.a.s.l. Bamboo and low canopy mountainous forest are found between 2400 m.a.s.l to 3500 m.a.s.l. Moorland is found above altitude 3500 m.a.s.l. Open savannah to the north of these districts is sparsely populated due to Cattle rustling.

4.3.2 Conservation and Protected Areas

Significant parts of Awoja catchment are covered by formal nature conservation and protected areas such as game reserves, central forest reserves, national parks, local forest reserves and hunting areas. The largest protected area in the catchment is the Pian Upe Wildlife Reserve and the smaller Mount Elgon National Park located in Kapchorwa, Bulambuli, Kween, Bukwa and Sironko districts. However, due to increasing population pressure, protected areas are being encroached upon as land to settle and farm on becomes scarce, especially in the northern parts of the catchment. Harvesting of forest products from conservation and protected areas is forbidden but the local people continue to harvest fire and other forest products resulting in conflict at their boundaries. Other encroachments have been for grazing and cropping.

4.3.3 Natural Resource Management Challenges in Project Area

The project area experiences environmental degradation, especially in wetlands, forests and range lands. Depending on location, various factors contribute to this continuous degradation such as population increase leading to unsustainable demand for ecosystems services, agricultural practices such as overgrazing being a cattle corridor and wetlands reclamation for rice growing.

The forest areas face a number of challenges such as unsustainable utilization for firewood, charcoal and brick burning. Wild fires are also a problem. Deforestation, wetland degradation, poor farming practices and loss of soil fertility are serious problems in the area. Population increase is considered as the major factor which has pushed people to carry out degrading activities while striving to meet their needs.

4.3.4 Summary of Existing Biodiversity Risks

- The decreasing vegetation types of woodlands, bushlands, grasslands and wetlands are of concern as these are some of the main biodiversity habitats.
- Significant conversion of wetlands to subsistence and commercial farmlands.
- Encroachments on conservation and protected areas is of concern as this compromises the objectives of their establishment.
- Continuous degradation of biodiversity resources attributed to a number of factors such as deforestation and poor farming practices.
- Unsustainable demand for ecosystem services and exploitation of non-timber forest products such as firewood, charcoal and brick burning.
- Wetland degradation, mainly reclamation for rice growing.
- Natural calamities such as wild fires.

4.4. Socio-economic Environment

4.4.1 Administration

Like other districts in Uganda, the districts in the project area, have a 5-tier form of governance with Tier 5 at the district level and Tier 1 at the village level. At the District level, there is representation of the central government headed by the Resident District Commissioner (RDC), local government headed by the District Chairperson and the technical team headed by the Chief Administrative Officer (CAO). Each of the districts is an independent local government with a 5-tier system of administration.

4.4.2 Demographic Characteristics

According to the National Housing and Population Census fo2014, the districts of Bukedea, Sironko, Kapchorwa and Bulambuli had a total population of 725,716 people of whom 367,188 (approx. 51%) were femaes, the rest being males (Table 4.2). Of the four districts, Sironko was the most populated (a total of 242,422 persons) followed by Bukedea (a total of 203,600 persons), Bulambuli (a total of 174,508 persons) and Kapchorwa (a total of 105,186 persons). Similarly, Sironko District is the most densely populated followed by Kapchorwa, Bulambuli and Bukedea, in this order (Table 4.2). The relatively very low total population of Kapchorwa District is due to the fact that about a third of its size is covered by Mount Elgon National Park.

Table 4.2 Population of Bukedea, Sironko, Kapchorwa and Bulambuli Districts (2014)

District	Male	Female	Total	Population Density	Growth Rate (2002 - 2014
Bukedea	99,122	104,478	203,600	197	4.3
Sironko	121,119	121,303	242,422	601	2.2
Kapchorwa	51,782	53,404	105,186	297	2.9
Bulambuli	86,505	88,003	174,508	251	4.9
Total	**358,528**	**367,188**	**725,716**	-	-

Source: 2014 National Population and Housing Census

4.4.3 Land Ownership

Land is the fundamental asset in agriculture and rural development. Access, security of tenure and gender equity are essential for the effective use of the land as a productive asset.

In the Awoja catchment, the following forms of land ownership exist:

- Freehold (with full rights registered ownership),
- Customary / community-based tenure (whereby land is regulated by customary rules often determined by clan or family leaders), and
- State leased (land leased for a specific period under certain conditions).

In all existing systems except for freehold title, women have been excluded from owning land. Interviews conducted at the time of preparing the Awoja catchment management plan indicated that in most cases, women own low value cropland which is usually away from the rivers where it is not possible to irrigate.

Land disputes occur throughout the districts of Bukedea Sironko, Kapchorwa and Bulambuli. The slow rate of resolution due to land court inefficiency sometimes result in violence and murder.

4.4.4 Livelihood Sources and the Economy

The population of Awoja catchment is largely rural (almost entirely rural) with district populations between 82 and 99% depending on agriculture for their livelihoods. Livelihoods are therefore almost exclusively based on the natural resources of the catchment with subsistence agriculture being the primary source of food and income. Most agriculture within the catchment is rain-fed.

One of the main risks to agriculture in the project area is vermin and problematic animals which ravage sweet potatoes, cassava maize, fruit and ground nuts.

4.4.5 Social Services and Infrastructure

The main social services in the project area include access to water and sanitation facilities (both potable water and for livestock rearing), worship centers (churches and mosques), health and education. A number of social service provision facilities are variably distributed within the project area.

4.4.7 Gender Roles and Development

Development challenges affect men and women differently based on their roles and responsibilities. In project area, for example, men are greatly affected in terms of pastures and water for livestock whereas women are affected in their roles to collect water and cooking fuel, take children to health units and other activities such as threshing and drying of produce. Women are concerned with household food security and thus suffer most in times of drought and food insecurity. The women's difficulties are further compounded by limited rights in land ownership.

4.4.8 Summary of Existing Socio-economic Risks

- The continuous increase in population implies increased demand of land for settlement and agriculture especially given that the district largely comprises of rural population.
- The limited land ownership rights given to women limits their economic planning in land investments and development, and growth.
- Land conflicts.
- Overdependence on rain-fed subsistence agriculture exposes them to climatic risks and hazards such as drought, flooding and landslides.
- Risk of vermin and problematic animals that ravage crops.
- High poverty levels.
- Gender disparities in roles, responsibilities and authority.

5. Procedures to Assess Potential Environmental and Social Impacts and Risks of Sub-projects

As the details of the specific components of the project (also referred to as sub-projects in this ESMF) are not yet defined, the environmental and social impacts presented in this chapter are described at a high level based on available project information and the existing baseline conditions. Once the specific sub-projects have been defined and designed, necessary subsequent environmental and social assessments shall be conducted for each of the sub-projects per the requirements of the applicable national laws and regulations, and in particular making reference to the relevant Schedules of the National Environment Act No. 5 of 2019.

5.1 Key steps

The section below illustrates the key steps that will be followed during the conduct of sub-project specific environmental and social assessment and management process consistent with Ugandan regulations and Africa Development Bank safeguard policies that will lead to the review and approval of sub-projects for this project.

5.1.1 Step 1: Screening of Activities and Sites

The Ministry of Water and Environment or through a team of environmental and social consultants will carry out screening of each of the sub-projects once they have been defined and agreed upon, to determine the nature of the respective sub-project characteristics, the characteristics of the prevailing local bio-physical and social environment with the aim of assessing the potential project impacts on it. The screening exercise will also identify the potential socio-economic impacts that will require mitigation measures and or resettlement and compensation.

5.1.2 Step 2: Assigning the appropriate Environmental Categories

The results of the screening exercise is determination of the level of risks associated with each of the subject projects. As per the National Environment Act No. 5 of 2019, Schedules 4, 5 and 6; the sub-projects will be categorized as:

- Schedule 4, Part 1: Projects for which project briefs are required: Project briefs to be submitted to the Authority (in this case, NEMA);
- Schedule 4, Part 2: Projects for which project briefs are required: Project briefs to be submitted to the Lead Agency (in this case Ministry of Water and Environment);
- Schedule 5: Projects for which Environmental and Social Impact Assessments are mandatory; and
- Schedule 6: Regulated activities in wetlands.

The lists/ examples of projects under each of the above categories are listed under the respective Schedules in the National Environment Act, 2019.

5.1.3 Step 3: Carrying out Environmental and Social Impact Assessment

Depending on the sub-project category, the Ministry of Water and Environment or through a team of independent environmental and social consultants will conduct the required level of Environmental and Social Impact Assessment (ESIA). As per Schedules 4, 5 and 6 of the National Environment Act, 2019, the required level of assessment will generally result in the preparation of a project brief or an environmental and social impact statement consistent with the requirements of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020.

As per the requirements of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020, the following issues will be considered in preparation of sub-project specific project briefs or environmental and social impact statements:

- Ecological considerations (biological diversity, sustainable use and management, and ecosystem sustenance);
- Physical environment (landscape, water, air quality, resource efficiency and pollution management, and climate change and climate variability); and
- Social considerations (land acquisition and land use, impacts on economic activities and property rights, opportunities for employment and wealth creation, occupational health and safety, impacts on human health and wellbeing, impacts on culture and heritage, impacts related to way of life, social interactions, cohesion or disruption, the fears and aspirations of the project-affected communities, impacts on population size and structure, social services and amenities, and stakeholder engagement).

Contents of a project brief

As per the requirements of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020, a project brief where required will contain the following in a concise manner:

a) a description of the proposed sub-project, including the name, purpose and nature of the sub-project in accordance with the categories in Schedule 4 of the Act;
b) the proposed location and physical boundaries, including a map and coordinates of the sub-project clearly showing the projected area of land or air that may be affected by the sub-project activities, or, if it is:
    - a linear activity, a description of the route of the activity and an alternative route, if any; or
    - an activity on a water body, the coordinates within which the activity is to be undertaken;
c) an evaluation of sub-project alternatives, including a zero or no-sub-project alternative in terms of sub-project location, sub-project design or technologies to be used, and a justification for selecting the chosen option;
d) the design of the sub-project and any other sub-project related components and associated facilities, including the activities that shall be undertaken and a description of the major material inputs to be used during construction or development and operation of the sub-project;
e) the estimated cost of the sub-project evidenced by a certificate of valuation of the capital investment of the sub-project, issued by a qualified and registered valuer;
f) the size of the workforce;
g) a description of the manner in which the proposed sub-project and its location conform to existing laws, standards and international agreements governing the sub-project, including reference to relevant plans required under the Physical Planning Act, 2010 and Building Control Act, 2013;
h) an indication of permits, licenses or other approvals that may be required for the project;
i) baseline conditions of the physical, biological and socio-economic environment of the project area, including results of relevant studies and other geophysical and geotechnical studies;
j) a description of potential direct, indirect, induced, cumulative, transboundary, temporary and permanent environmental, health, social, economic and cultural impacts of the sub-project and their severity, and the proposed mitigation measures to be taken during the planning, design, pre-construction, construction, operational and decommissioning phases of the sub-project;
k) proposed mitigation and preparedness measures for potential undesirable impacts that may arise at sub-project implementation;
l) a description of climate-related impacts associated with the sub-project, including potential climate benefits and carbon footprints of the proposed sub-project, as well as the potential vulnerability of the proposed sub-project or activity to climate change, and the proposed adaptation and mitigation measures;
m) a description of alternative resettlement areas for sub-project affected persons, if any, their associated environmental and social impacts, and or any plans for compensation to project affected persons;

n) an environmental management and monitoring plan developed in accordance with regulation 46, incorporating climate adaptation and mitigation plan;
o) plan for stakeholder engagement throughout the proposed sub-project or activity development, including details on how to address potential related grievances or requests for information, and evidence of stakeholder consultation; and
p) any other information required by the Authority (in this case NEMA) or Lead Agency (in this case Ministry of Water and Environment).

Conduct of an environmental and social impact study

As per the requirements of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020, the Ministry of Water and Environment through a team of environmental and social consultants shall conduct an environmental and social impact study for the respective sub-projects where required. The procedure for the conduct of environmental and social impact study is:

- Conduct of a scoping exercise and preparation of terms of reference for the ESIA study per regulation 13 of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020;
- Review and consideration of terms of reference by the Authority (in this case NEMA) per regulation 14 of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020;
- Conduct of detailed environmental and social impact study per regulation 15 of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020;
- Stakeholder consultation during the environmental and social impact study per regulation 16 of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020;
- Preparation of environmental and social impact statement per regulation 17 of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020; and
- Submission of environmental and social impact statement to NEMA per regulation 18 of the National Environment (Environmental and Social Assessment) Regulations No 143 of 2020.

Activities to be undertaken during the conduct of sub-project specific ESIAs

The ESIA team will undertake the following activities:

- **Stakeholder consultation and participation activities:** Consultations will be conducted with relevant stakeholders at both national and local levels to identify and incorporate stakeholder views and comments into the project. At the national level, key stakeholders will include the Ministry of Water and Environment (MWE), National Environment Management Authority (NEMA), National Forestry Authority (NFA), Uganda National Meteorological Authority (UNMA), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) while at the local level, the stakeholders will include local governments of the host districts (District Chairperson, District Chief Administrative Officer, District Natural Resources Officer, District Environment Officer, District Forestry Officer, District Production Officer and District Community Development Officer amongst others). The ESIA team will also identify and consultant relevant Non-Governmental Organisations (NGOs) and institutions such as the Sawlog Production Grant Scheme (SPGS).
- **Document Review:** A review of relevant documents will be undertaken to consolidate baseline information of the Project area as well as have a good understanding of other projects, policies and plans that has an influence or will be influenced by the proposed project. This will enable synchronization of the proposed project with other projects, policies and plans for the target area.
- **Site Visit:** Site visits to the sub-project areas will be conducted to ascertain the baseline conditions (including to ascertain some of the aspects obtained from the reviewed documents) to inform the design of the sub-project.

- **Identification of Key Environmental and Social risks and impacts, and recommended mitigation measures:** Significant environmental and social risks and impacts that are potentially associated with the proposed project will be identified and described. Key mitigation/management measures will be identified for each of the identified significant environmental and social risks and impacts. The desired outcome will be to reduce the significance of identified significant risks and impacts to acceptable levels (preferable to minor or negligible significance).
- **Preparation of sub-project Specific ESIA Project Reports or Study Reports (including sub-project Specific ESMPs):** Based on the identified significant risks and impacts, and the recommended management/mitigation measures, ESIA project reports or ESIA study reports depending on the extent of the assessment and consistent with the report structures as per Uganda's National Environment (Environmental and Social Assessment) Regulations (2020) will be prepared. For purposes of good environmental and social management, each of the ESIA project report or ESIA study reports should contain (either as a specific chapter within the report or standalone deliverable/attachment), an appropriate Environmental and Social Management Plan (ESMP). To attain the desired outcome, key environmental and social aspects (indicator aspects) will be identified for monitoring during the implementation of each of the projects and used to develop an appropriate project specific environmental and social monitoring plan.

Composition of the ESIA Team

The minimal technical expertise required for the ESIA teams will include the following:

- **Team Leader:** The Team leader will be required to have proven experience in leading sector or national reviews or assessments of public policies, plans or projects, or development strategies. At least 10 years' experience, of which 05 years are relevant experience in developing countries including East Africa, is required. Experience in Uganda is desirable. S/he must have academic training in natural resources management, environmental or social sciences and registered with Uganda's National Environment Management Authority as Team Leader. Experience in SEA /SESA, ESIA and Environmental Audit (EA) is desirable. Experience with AfDB's projects or projects and other lender institutions is required.
- **Ecologist/Ecosystem Services Specialist:** The ecologist/ecosystem services specialist should have at least 08 years of experience in ecosystem management, including natural and modified ecosystems. Experience within East Africa and Uganda, in particular, is desirable. Knowledge on the legal, regulatory and institutional framework of natural resources management in Uganda including agriculture is desirable. Experience with AfDB's projects or projects and other lender institutions is desirable.
- **Gender Specialist:** The gender specialist should have at least 08 years of experience on advising on gender aspects of project or project implementation. Familiarity with social and gender issues of communities in East Africa is required. Experience within East Africa and Uganda, in particular, is desirable. Knowledge on the legal, regulatory and institutional framework of natural resources management in Uganda including agriculture is desirable. Experience with AfDB's projects or projects and other lender institutions is desirable.
- **Stakeholder Engagement Specialist:** The stakeholder engagement specialist should have at least five years of experience in Uganda. Proven knowledge of stakeholders at the national, regional and local level on the implementation of community projects/projects is required. Knowledge of the main local language spoken in the target area (Ateso) is desirable. Experience with AfDB's projects or projects and other lender institutions is desirable.
- **Environmental Specialist:** The Environmental specialist should have at least 5 years of experience in environmental assessment in developing countries including Uganda. Familiarity with AfDB ISS is desirable. Registration with Uganda's National Environment Authority (NEMA) as an Environmental Practitioner is required.

- **GIS and Mapping Specialist:** The GIS and mapping specialist should be able to cover all mapping requirements of the ESIAs. Experience of at least 5 years and proven experience on mapping and GIS techniques is required.

All members of the team should be fluent in English. If deemed necessary, a local consultant can partner/ form a Joint Venture (JV) with an international company to enhance their capacity.

5.1.4 Step 4: Review and Approval

Once the project report or environmental and social impact statement has been submitted to NEMA, NEMA will proceed with the review and approval process.

5.1.5 Step 5: Environmental Monitoring

Monitoring is required to ensure that all the required environmental and social mitigation measures, set out in the ESIAs for each sub-project component are implemented satisfactorily.

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 respective project briefs or environmental and social impact statements.

For details on the monitoring and reporting arrangements, please refer to Chapters 7 and 8 of this ESMF.

6. Project Impacts and Mitigation Measures

Once the specific sub-projects have been defined and designed, necessary subsequent environmental and social assessments shall be conducted for each of the sub-projects per the requirements of the applicable national laws and regulations, and in particular making reference to the relevant Schedules of the National Environment Act No. 5 of 2019 to identify and fully assess the impacts associated with each of the sub-projects.

However, based on the available project information, the potential project impacts are described below:

5.1 Positive Impacts

- Restoration of degraded areas: The project proposes restoration of degraded areas through afforestation and reforestation of an estimated 2,500 ha of forest land, rehabilitation and erosion control at degraded sites, promoting sustainable wetland/watershed management, sustainable resource management and restoration, an estimated 25 km (cumulative), of riverbank protection/restoration intervention envisaged to reduce risk of flooding associated with increased water flows during flood events safeguarding adjacent communities and physical infrastructure.
- Improved farming practices: This will be through activities/ projects such as community support for agroforestry for conservation agriculture of an estimated 3,500 ha n selected degraded areas (proposed actions include: contour ridging, restoration of traditional terrace systems and use of vetiver grass to reinforce marker ridges),
- Support of alternative livelihood sources: Proposed interventions include fish farm integrated units, fruit orchards and honey production.
- Establishment of Climate-resilient community-based water harvesting, storage and distribution systems (valley tanks/small earth dams) to provide water supply for an estimated 28,000 livestock. This will directly support livestock production especially for a dry spell of six months in the watersheds.
- Improved gender balance and climate smart development through preparation of appropriate Community Action Plans (CAPs).
- Community awareness and capacity building on environmental management measures (particularly, reforestation and forest management, soil conservation, wetland protection and watershed management). Other areas include development, packaging and dissemination of weather and climate information for sensitizing vulnerable communities on weather and climate information use; and strengthen human capacity in weather observing, forecasting and information management.
- Support to institutional framework for watershed management such as the creation of watershed management committees, production/dissemination of technical and communication support, conducting training sessions, workshops and visits, and production and dissemination of technical and communication support.
- Mapping of Wetland Management Units and preparation of Wetlands Management Plans.
- Strengthening Meteorological Services. Indicative activities will include: Expansion of weather and climate observing network (installation of 10+ meteorological monitoring stations with telemetry, archiving and data processing facilities); Expansion of hydrological network (installation of 10+ hydrological monitoring stations with telemetry, archiving and data processing facilities); Development of strategy for scaling up the climate and weather information systems, and enhancement of hydro-meteorological station O&M in the long term.
- Development and installation of a flood early warning and response system.

5.2 Negative Impacts

- Impacts associated with land identification and acquisition for some of the proposed Project activities. Particularly, this will be an estimated 2,500 ha for afforestation and reforestation. It is expected that this will largely be within existing degraded protected or communal areas; however, given the rampant encroachments, this will directly affect the current users/ beneficiaries of such areas. Depending on the

finally selected land areas, this could result in both economic and physical displacement and associated negative impacts on the local people's livelihoods.

- Impacts associated with waste management. Different forms of waste will be generated from the different Project activities which will include packaging materials, domestic waste, waste materials and other specific wastes depending on the final design of the projects. If not well managed, these wastes will have varying impacts on human health, soil, water resources and livestock health, among others.
- Impacts on community health and safety. Risks to community health and safety will be posed by the Project machinery and project workers. Such risks if not well mitigated will rise in a number of impacts such as traffic accidents involving project vehicles/ machinery and the local community members and increased spread of diseases in the host communities as a result of interactions between the project implementation team/workers from outside the project area and the local community members especially for communicable diseases such as the current COVID-19 pandemic.
- Impacts on biodiversity. Particularly, potential increase in the spread of invasive species. Agroforestry and reforestation as well as land based alternative livelihood activities (fish farming, establishment of orchards, etc) has a potential of increasing the spread of invasive species either as weeds or part of the promoted species if these are not properly identified and managed. Ideally, invasive species should be avoided as much as possible and the spread of existing ones effectively controlled.
- Gender Equity and Gender-Based Violence (GBV) risks. Disparities in gender roles, responsibilities and power/authority over property ownership and decision making as per the local tradition and culture have disproportionate impacts on the gender (males and females) in terms of access to resources, development opportunities (including employment opportunities) and impact on the overall success of the project. For example, in the project area, men have more authority on land ownership as well as decision making on the land use activities; therefore, if not involved in the planning may negatively impact the success of the project. On the other hand, women's less authority over land ownership and decision making puts them at a disadvantaged position and may not fully benefit from the project if specific actions enhance their participation and benefit are not incorporated.
- Occupational Health and Safety (OHS). Project activities poses a number of OHS to the project workers which include fatal accidents, injuries (both major and minor), sickness and illnesses due to prolonged exposure to unsafe practices, among others. The specific OHS risks per project will need to be identified once the project details have been fully described and measures put in place to manage them.
- Impacts associated with use of chemicals. Some of the program activities may include use of chemical which may result in a number of impacts such as soil and water pollution as well as human health impacts.

7. Arrangements for Monitoring and Sub-project Supervision

The purpose of the environmental and social monitoring programme is to ensure that recommended management measures are implemented and are effective at achieving an acceptable level of compliance.

7.1 Monitoring

In practice, monitoring every environmental and social aspect of a project is intensive, costly and usually not a preferred option. However, identification of key environmental and social performance indicators of the project, for monitoring, is recommended. These should be included in a project monitoring plan and implemented as project implementation progresses. It is important to note that the key performance indicators selected should be able to help management to identify areas/aspects where potential gaps exist and where necessary inform the decision on the need for intensive investigation, for example, spillages which triggers the need to for water quality analysis of nearby streams or increased worker complains which triggers the need to review the employee management procedures.

The identified key environmental and social performance indicators should be used to prepare a project's environmental monitoring which should include the following, to a minimum:

- Aspect to be monitored;
- Monitoring method;
- Desired outcome;
- Responsibility for monitoring;
- Timing for monitoring and monitoring frequency.

Aspects whose actual outcomes are significantly different from the desired outcomes should be investigated and corrective measures implemented. The ultimate target is to achieve 100% compliance with the ESMP.

7.2 Audit

Audits should be comprehensive to cover every environmental and social aspect of the project, ultimately giving a full environmental and social performance of the project. However, these should be less regular that environmental and social monitoring. In Uganda, the need for environmental is normally included in the environmental licenses issued by the National Environment Management Authority (NEMA), thus a legal mandate. Usually, these are required to be carried out annually during the construction and operations phases; however, depending on the nature of the project, it is at the discretion of NEMA to vary the audit frequency.

7.3 Sub-project Supervision

It is required that the Project implementation agency (in this case MWE) establish a sub-project supervision team which should include environmental and social specialists to supervise the contractor/field team. The main role of this team is to ensure that the sub-projects are implemented as planned as well as implementation of all the recommended environmental and social management measures. In particular, the sub-project supervision team should review all the monitoring and audit reports, and provide any required additional guidance to the contractor/field team.

8. Arrangements for Reporting

8.1 Reporting to MWE

Typical environmental and social reporting will be in the form of monitoring and audit reports. It is recommended that these should be prepared and submitted to management review as per the environmental and social monitoring plan, as well as the relevant permit requirements.

8.2 Reporting to Lenders

The Project implementation agency (in this case MWE) is required to periodically report to the lenders, to keep them updated of the project progress and sub-project performance. The reporting interval should be discussed and agreed upon between MWE and the lenders, as deemed appropriate. However, it is imperative that apart from the agreed regular reporting interval, any material environmental and/or social issue and significant negative occurrence is reported to the lenders as soon as possible.

9. Outline of Proposed Mitigation and Enhancement Measures

9.1 Proposed Mitigation Measures

As guided by both the national laws and regulations, and the AfDB ISS, additional environmental and social assessments will need to be conducted in the next stages of project planning to fully identify and assess all the impacts associated with it.

In addition, the following general recommendations should be implemented during project implementation:

- As land is a very scares resource, interventions that empower the local community members to appropriately utilize their land are paramount. In particular, agroforestry, where the local people own the agro-forestry farmlands is commendable since it avoids the need for land acquisition but rather empowers the local community members to benefit more from their land in a sustainable manner.
- Any private land that will be required for the project should be acquired in line with the requirements of the national laws as well as international good practice standards. In particular, appropriate Resettlement Action Plans (RAPs) or Livelihood Restoration Plans (LRPs) should be prepared and implemented as needed.
- Acquisition of land for project projects such as afforestation should consider the current land use and its impacts on the current user's liveihoods. Alternative livelihood sources or adequate compensation should be offered to the individuals whose livelihoods will be negatively affected by the project (specific interventions/actions should be included in the RAPs/LRPs).
- Physical displacement should be avoided as much as possible, and where avoidance is not possible, the affected households should be adequately compensated or alternative houses constructed for them (specific interventions/actions should be included in the RAPs).
- Once the project projects/sub-projects have been defined as well as their definite locations, various levels of environmental and social assessments will need to be conducted, the level depending on the details of the sub-projects (refer to Chapter **Error! Reference source not found.** for details on this).
- The local community members should be sensitized about good environmental management (training/awareness).
- The project implementation team should undergo training in relevant environmental and social management aspects of the project for effective implementation (details in Chapter 10).
- The selection of agro-forestry trees to promote should consider the current land use practices to further enhance improvements in land productivity.
  As much as possible, the project should incorporate organic practices and where the use of inorganic compounds cannot be avoided, their environmental impacts determined in advance to avoid negative long term environmental impacts such as land and water pollution.

10. ESMF Implementation Framework

10.1 Overall Responsibility of MWE's Environmental and Social Safeguards Staff

The responsibilities of the Ministry of Water and Environment's Environmental and Social Safeguards staff will include the following:

- Ensuring that communities and local government departments have up-to-date information on project and its sub-projects.
- Facilitating environmental and social impact assessments including developing relevant TOR for ESIA consultants.
- Coordinating environmental and social commitments and initiatives with relevant government agencies.
- Supervising and monitoring ESMP implementation and producing periodic reports.
- Training local governments, contractors, and communities on environmental and social safeguards issues and implementation of ESMPs.
- Facilitating land acquisition and resettlement processes as required.
- Coordinating with, and receiving feedback from, the Independent Third-Party Monitoring Agencies.

10.2 Project Institutional Implementation Arrangements

At the current stage, the overall responsibility for the implementation of this ESMF is assigned to the Ministry of Water and Environment. However, as the sub-projects get identified, agreed upon and described, a sub-project specific implementation framework will be prepared as part of their respective ESIA studies. It is expected that this will include stakeholders from various institutions depending on the expected activities of each of the sub-projects.

10.3 Requirements for Training and Capacity Building to Enable ESMF Implementation

One of the most important mechanisms for the enhancement of the project's environmental and social performance will be the continued implementation of a training project for all sub-project personnel including all subcontractors and third parties (including relevant officials at the host district local governments).

The key components of training requirements are to ensure that all sub-project personnel, including all subcontractors and third parties understand the:

- MWE's environmental and social policy which is also applicable to the project;
- Environmental and social requirements of the sub-projects and how these will be implemented and monitored on site;
- Contents and relevant requirements of sub-project actions contained within the applicable management plans;
- Environmental and social sensitivities of the sub-projects' footprint and surroundings;
- Procedures to be followed in the event of non-compliance with the environmental and social requirements;
- Process for addressing unforeseen environmental and social incidents; and
- Responsibilities with respect to environmental and social issues applicable to their roles.

Training should include:

- Induction training for all staff including modules on: health and safety, environmental awareness, accommodation rules, worker code of conduct, stakeholder engagement, grievance mechanisms and cultural heritage awareness;
- Training on the HSE legal requirements and HSE compliance commitments of the sub-projects. It is critical that all staff on the sub-projects understand the laws and regulations and rules the sub-projects has committed to, and that staff understand the consequences of breaking these rules;
- Toolbox training for specific topics and tasks; and
- Training for individuals involved in tasks with specific responsibilities.

Refresher training s will also need to be implemented to ensure continual improvement in environmental and social awareness for all sub-project personnel.

Training should be provided at each stage of the sub-projects, from initial establishment of logistical facilities through to construction and (to a lesser degree) operation. The training function will assist managers in developing and coordinating training programmes as required.

Training records should be maintained by the sub-projects and an assessment of the effectiveness of the training programmes should be included as part of the internal audit procedures.

11. Budget and Disclosure of ESMF

11.1 ESMF Budget

Estimated costs associated with the implementation of this ESMF are summarized in Table 11.1. However, please note that the estimated costs are for addressing associated environmental and social risks and impacts only and exclude technical project implementation budget which is expected to be based on the engineering design and estimated by the engineering/design team. It is important to also note that the recommended actions such as preparation of RAPs will result in additional action implementation costs which can best be estimated once these studies have been conducted based on detailed sub-project design and defined locations.

Table 11.1 Estimated ESMF Implementation Budget

Action/Measure	**Estimated Cost (USD)**	**Note/Comment**
Preparation of RAPs/LRPs	500,000	Expected to cover approximately 2,500 ha required for afforestation and reforestation and any other land required for (valley tanks/small earth dams)
Conduct of Project Specific ESIAs (including preparation of project/sub-project specific ESMPs)	200,000	ESIA study (including ESMPs for afforestation and reforestation project, valley tanks/small earth dams number not yet determined) as well as any additional sub-project specific ESIAs/ESMPs
Training and awareness – local community members	20,000	Target community awareness meetings (estimated ten community meetings). Costs for venue hire, refreshments, transport logistics, allowances of trainers etc. Training/awareness expected to be conducted by the project implementation team (MWE and local government officials).
Training and awareness – Implementation Team (including local government leaders of host districts)	35,000	Estimated five training sessions (one per host district (Bukedea, Kapchorwa, Sironko and Bulambuli districts), and one for MWE team (and other relevant central government agencies) preferably at the regional level, and costs of an external facilitator.
Community health and safety	10,000	Estimated lumpsum budget for continuous community health and safety awareness during programme implementation. Mainly for logistic purposes since this awareness is expected to be conducted by the project implementation team.
Occupational Health and Safety (OHS)	20,000	Estimated lumpsum for addressing OHS aspects of the project implementation team such as procurement of first aid kits, necessary Personal Protective Equipment and first aid services. The programme implementation team are expected to have separate medical covers, thus considerable medical costs excluded from this estimation. This estimate also excludes OHS costs of the project/sub-project contractors' teams which is expected to be planned for by the respective contractors.
Total Estimated ESMF implementation budget	**785,000**	

Notes: The budget will be confirmed at the start of implementation, when the sub-projects are defined. Further, the cost of implementation of mitigation measures shall be embedded in the Bills of Quantity for implementation by the implementer.

11.2 ESMF Disclosure

This ESMF has been prepared as part of the Feasibility Study (FS) for the project and will be appended to the FS. As such, it will be disclosed together with the FS on the Ministry of Water and Environment and AfDB's websites.

12. Conclusion

The proposed Project is commendable as it aims at strengthening the adaptive capacity of the target area to climate change impacts. However, due to the already experienced climate and climate change risks in the area as well as the continuously increasing population which has continued to influence land use activities; for example, conversion of wetlands to rice farms, proper planning and implementation is required to avoid execrating environmental and social impacts.

As recommended in Chapter **Error! Reference source not found.**, it is imperative that project/sub-project specific ESIAs are conducted, with more precise information on detailed project/sub-project activities to further define environmental and social impacts.

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Annex 1: List of Identified Project Stakeholders

Institution	Contact person (name, designation, location of office)
National level	
Ministry of Finance, Planning and Economic Development	Aide Laison Office - Collins
Ministry of Water and Environment (MWE)	
Permanent Secretary	Alfred Okot Okidi
Climate Change Department	Bob Natifu (Ag Commissioner, MWE Luzira)
	Mohammed Ssemambo (Senior Climate Change Officer - Adaptation, MWE Luzira)
	Henry Bbosa (Senior Climate Change Officer - International relations, MWE Luzira)
	Oluka Godfrey
DEA - Forestry Support Services	Margaret Adata (Commissioner, MWE Luzira)
DEA - Wetland Management	Lucy Iyango (Assistant Commissioner, MWE Luzira)
DWD – Water for Production	Eng Gilbert Kimanzi (Commissioner, MWE Luzira)
DWD - Rural Water	Joseph Eyatu (Commissioner, MWE Luzira)
DWRM - Water Resources Monitoring & Assessment	Dr. Benon Zaake (Commissioner, MWE Entebbe)
DWRM - Water Resources Planning & Regulation	Dr. Callist Tindimugaya (Commissioner, MWE Luzira)
Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)	
Department of Agricultural Infrastructure, Mechanisation, and Water for Agricultural Production	Eng Ronald Kato Kayizi (Commissioner, Entebbe)
	Eng Silas Ekadu (Senior Engineer, Soil & Water Conservation, Entebbe)
Ministry of Finance, Planning and Economic Development	Andrew Masaba Senior Economist in charge of climate change
	Denis Mugagga (Economist, GEF &AfDB focal person, Kampala)
	Patrick Ocailap (Ag Deputy Secretary to the Treasury)
National Forestry Authority (NFA)	Xavier Mugumya (REDD+ focal person and climate change officer, Kampala)
Uganda National Meteorological Authority (UNMA)	Festus Luboyera (Executive Director, Entebbe)
National Environment Management Authority (NEMA)	Dr. Tom Okurut (Executive Director, NEMA Kampala)
	Waiswa Ayazika (Monitoring and Compliance Manager)
UWASNET	Yunia Yiga Musaazi (Executive Director, Kampala)
Private Sector Foundation of Uganda	Gideon Badagawa (Executive Director, Kampala)
Regional level	
Kyoga Water Management Zone	Maximo Twinomuhangi (Team Leader, Mbale)
Water and Sanitation Development Facility East	Eng. George Alito (Manager, Mbale)
Rural Water Regional Centered (RWRC) 3 (formerly TSU 3)	Eng. Jimmy Biyomotho (Team Leader, Mbale)
Water for Production Regional Centre East	Eng. Patrick Okotel (Manager, Mbale)
Awoja Catchment Management Committee	Hon George Egunyu (CMC Chairperson, Soroti DLG)
	Albert Anguria (CMC Secretary, Kween DLG)
NEMA regional Office	Esther Osikol (Senior Environment Inspector, Mbale)
NFA Mbale Sector Office	Betty Forde Nansubuga (Sector Manager, Mbale)
DEA Regional Wetlands Office	Deo Kabalu (Team Leader, Coordinator Wetlands, Mbale)
Buginyanya Zonal Agricultural Research and Development Institute (ZARDI)	Dr. Lawrence Owere (Director, Mbale)

Institution	Contact person (name, designation, location of office)
District and Local level	
Bukedea DLG	
-District Natural Resources Officer	Oluka David
-District Planner	Engineer Emudong
Kapchorwa DLG	
-District Production Officer	Nelson Apil
-District Natural Resources Officer	Awadh Chemangey
-District Planner	Andrew Teko Bayi
Sironko DLG	
-District Production Officer	Dr. Okori
-District Natural Resources Officer	Rashid Mafabi
Bulambuli DLG	
-District Production Officer	Alfred Tsekeli
-District Natural Resources Officer	Hellen Sarah Madanda
- District Forestry Officer	Manget Franco
Civil Society Organisations	
IUCN	Sophie Kutegeka (Country Director, Kampala)
Kapchorwa District Landcare Chapter (KADILAC)	Simon Nyangas (Coordinator, Kapchorwa)
ECOTRUST	Pauline Nantongo (Executive Director, Entebbe)
	Isaac Kiirya (Programme Manager, Mbale)
	Adrine Kirabo (Programme Officer)
Sironko Valley Integrated Projects (SVIP)	Kassim Gibusiwa (Cordinator, Sironko)
Donors and Development partners	
BMZ	
EU	
World Bank	
JICA	Inoue Yuki (Agriculture, Water and Environment Sector, Kampala)
KfW	Anna Nikolaeva-Schniepper (Project coordinator Energy and Rural Development, Kampala)
Others	
Presidential Initiative on Banana Industrial Development	Joseph Bahati
ICRAF	Clement Okia (Country Representative)
RAIN	Raymond Tumuhaire (Project Officer)