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THE REPUBLIC OF UGANDA



SCOPING STUDY FOR STRENGTHENING SUSTAINABLE ENVIRONMENT AND NATURAL RESOURCE MANAGEMENT, CLIMATE CHANGE ADAPTATION AND MITIGATION IN UGANDA (SS-ENRM-CCA)



**PREPARED FOR
UNDP OFFICE IN UGANDA**

**SUBMITTED TO:
THE DIRECTOR,
WWF UGANDA COUNTRY OFFICE**

Prepared by:
Jane Bemigisha (PhD)
ESIPPS INTERNATIONAL LTD, KAMPALA

**FINAL REPORT
JULY 2012**



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SCOPING STUDY FOR STRENGTHENING SUSTAINABLE ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT, CLIMATE CHANGE ADAPTATION AND MITIGATION IN UGANDA (SS-ENRM CCA)

FINAL REPORT ON BIODIVERSITY AND SUSTAINABLE LAND MANAGEMENT

JULY 11, 2012



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Cover page pictures: Front-Focus group discussion with Kisoga Balikyewunya and Tukorere Wamu Farmers Field School, in Rakai District;
Back- Maize and mangoes under SLM (Low till/mulching and manure application) in Kamuli District

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EXECUTIVE SUMMARY

INTRODUCTION

This document presents outputs of a scoping study on biodiversity and sustainable land management in Uganda. The study was undertaken as part of the project: “Strengthening of sustainable environment, natural resource management and climate change adaptation/ mitigation in Uganda” (SS-ENRM-CCA). The project focuses on strengthening the efforts and capacities of local governments, CSOs and communities to sustainably manage and utilize natural resources, integrate climate change adaptation and mitigation in their activities and build climate resilient societies. This is to be achieved through developing, piloting and implementing initiatives in biodiversity and ecosystems management, sustainable land management, efficient energy technologies and reduction in GHG emissions thus building climate change resilient communities.

This scoping study focused on two project outputs namely: - 1) Mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated and; 2) Key successful sustainable land management (SLM) practices identified and replicated. The overall aim of the study is to identify a focus for the project in terms of areas/sites, stakeholders (local governments, CSOs and communities), and approaches to strengthen capacities to sustainably manage and utilize natural resources, to integrate climate change adaptation and mitigation in activities, and to build climate change resilient societies. The specific objectives of the scoping study are to (i) Identify key ENRM issues and gather data in biodiversity and environmental hotspots; (ii) Verify and map ongoing and planned land management, biodiversity and ecosystem services initiatives and identify gaps for project interventions; (iii) Based on the key ENRM issues identified and mapped, select priority geographical areas and sites for project interventions based on impacts of sustainable natural resource and land management issues. This will take into account priorities expressed in national plans and strategies, and the presence of complementary programmes and projects.

The scoping study report is a result of an intensive consultative process which started with review of existing documentation on legal and policy framework and current initiatives and issues relating to biodiversity conservation and natural resources management in Uganda. Consultations with stakeholders were made at community (Parish and Sub-county level) through focused group discussions with CBOs and community representatives by use of checklists. At national and district levels, views were collected by administering questionnaires /interviews with NGOS, CBOs, private enterprises, local government staff and politicians in the environment and natural resources sector. The selection of the districts and communities was guided by a Geographic Information System (GIS)–based criteria

evaluation considering selected biodiversity, key ecosystems and human indicators. To map project sites and build a database of project activities and initiatives by different stakeholders, a GIS (ArcGIS 2010 and Global Positioning System (GPS) were used.

FINDINGS

Key ENRM issues in biodiversity and environmental hotspots

- i. Conservation of threatened species in biodiversity hotspots especially in the Albertine rift.
- ii. Expansion of agriculture on previously forested steep terrain in mountain ecosystems and highlands.
- iii. Sustainable land management within land degradation and desertification hotspots: the arid/semiarid cattle corridor.
- iv. Management of forestry resources.
- v. Climate Change and variability.
- vi. Management of environmental impacts of oil and gas exploration and development in the Albertine Graben.
- vii. Watershed management in vulnerable catchments of Semliki, Manafwa and Lokok rivers.
- viii. Landslides and erosion in the highland ecosystems.
- ix. Wetlands management.
- x. Need to upscale renewable energy options.
- xi. Equitable gender roles and responsibilities.
- xii. Management and control of Persistent Organic Pollutants (POPs) in hotspot ecosystems such as wetlands and river catchments.

Gaps for scaling up ENRM initiatives: Barriers capacity gaps

From consultations, the major gap was limited capacity in scaling up of ENRM project activities. Therefore gaps for intervention were identified as barriers and capacity gaps in up-scaling of ongoing ENRM initiatives and or starting new ones. About 95% of the questionnaire respondents indicated that they face a lot of challenges in scaling up ENRM/SLM interventions. The major barriers to scaling up ENRM/SLM interventions were mentioned as:

- i. Inadequate funding.
- ii. Limited trained manpower and lack of field equipments.

- iii. Limited awareness , sensitization and participation in ENRM
- iv. Poor approach for law enforcement
- v. Political interference
- vi. Poor accessibility and inadequate transport facilities
- vii. Poor management of trans-boundary natural resources
- viii. High cost of agro-forestry in-puts
- ix. Land shortage and land fragmentation
- x. Negative attitudes among communities
- xi. Limited capacity of local governments to carryout ENRM initiatives
- xii. Institutional capacity of CSOs, NGOs, SMEs and Government Agencies to mainstream climate change challenges in ENRM
- xiii. Lack of or limited incentives to scaling up initiatives of ENRM
- xiv. Vulnerable communities
- xv. Limitations in identifying, developing and implementing appropriate sustainable ENRM initiatives.

Capacity gaps for scaling up SLM practices and enhancing biodiversity conservation and restoration of degraded ecosystems were identified at the various levels; District and sub-county local governments, CBOs, and local communities.

a) The capacity gaps at district and sub-county levels

- i. Limited funding. Thirty percent (30%) of the respondents indicated that there was limited financing of the ENRM sector, thus limiting the capacity for the districts and sub-counties to promote SLM and biodiversity conservation initiatives.
- ii. Inadequate staffing in the ENRM departments and skilled staff (19% of respondents).
- iii. Transport facilitation and logistics hampers mobility of extension workers and district staff to the field to train and sensitize farmers.
- iv. Lack of byelaws coupled with poor policy and law enforcement by the districts. This is exacerbated by political interference in policy implementation and law enforcement.
- v. Lack of information and knowledge about SLM techniques and Community Based Natural Resources Management and biodiversity conservation approaches.
- vi. Lack of adaptive land use planning and its incorporation into district ENR sector plans.

- vii. Environment committees that are important in implementation and management of the ENRM and biodiversity conservation interventions are lacking in some districts.

b) Capacity gaps amongst CBOS and community groups

- i. Land shortage.
- ii. Lack of inputs and equipment.
- iii. Skills and knowledge gaps in SLM techniques and land restoration.
- iv. Financing and access to credit/soft loans facilities to purchase inputs, materials and equipment
- v. Lack of skills in management systems like records keeping and management, financial management to be able to monitor their activities, impacts and efficiency.
- vi. Limited support for services such as processing, handling and marketing of products: This includes market information, post harvest support and facilities, processing and handling, etc.,

On-going initiatives in ENRM:

The ongoing initiatives in ENRM were identified as follows:

- 1) Uganda Wildlife Authority (UWA) and National Forestry Authority (NFA) are carrying out forest restoration under Collaborative Forest Management (CFM).
- 2) World Bank supporting a number of Clean Development Mechanism Projects.
- 3) IUCN supporting MERECP, a regional trans-boundary conservation and sustainable development project on Mt. Elgon ecosystem.
- 4) IUCN and ACF Project on Building drought resilience in the Karamoja region through IWRM, with funding from ECHO – The European Commission on Humanitarian Aid.
- 5) IUCN-UNDP project on “Extending Wetland Protected Areas through community conservation initiatives” (COBWEB) adjacent to L. Mburo PA (Isingiro, Rakai districts) and the Pian-Upe PA (Katakwi and Ngora districts). COBWEB involves soil and water conservation for catchment management; tree buffer around the lake and wetland boundary demarcation; re-vegetation and restoration of catchments of L. Nakivale and L. Kacheera in Isingiro and Rakai districts respectively; and promoting eco-tourism as a catalyst for biodiversity conservation in the L. Bisina-Opeta wetland complex adjacent to the Pian-Upe in Katakwi and Ngora districts.
- 6) The IUCN Project on “Building drought resilience in the Upper Aswa sub-catchment”, with funding from the Austrian Development Corporation (ADC).

- 7) UNDP in conjunction with World Bank through MAAIF, supporting Sustainable Land Management (SLM) with a linkage to climate change (MAAIF, 2011); The project to mainstream SLM activities in the six cattle corridor districts of Uganda was developed to contribute to the UNDP Country Program Action Plan (CPAP) outcome “Enterprises and communities, particularly women, are able to access alternative energy, adapt to climate change and sustainably use natural resources for productive purposes”.
- 8) Promotion of biogas energy by supporting on-farm enterprise mixing: zero grazing livestock mixing with crop husbandry targeting biogas energy, food security based on increased yield by manure application and income mainly promoted by NGOs (Send a Cow, Heifer International, SNV), churches, private individuals, Government (mainly NAADS), UNDP and Development Partners, such as IUCN and ICRAF.
- 9) WWF supporting UWA in biodiversity conservation in the Rwenzori Mountain National Park;
- 10) WWF in collaboration with MWE is also engaged in integrated watershed management in the River Semliki Basin.
- 11) WWF Conservation of Biodiversity in the Albertine Rift Forests of Uganda concluded project, supported by UNDP-GEF and executed in partnership with MWE and others including NFA, Wildlife Conservation Society (WCS), CSOs, NGOs, CBOs and District Forest Services. The project aimed to implement innovative conservation activities in the Northern Albertine Forests of Uganda. The project focus was on developing a strategic plan for the northern Albertine Rift under the Regional Framework, including a coherent M&E strategy. Activities included support to collaborative forest management, strengthening of NFA capacity for improved management of Central Forest Reserves, strengthening and maintenance of linkages between these protected areas through incentives for forest conservation on private land and promotion of incentives for alternative resource use strategies and conservation on private lands.
- 12) The Territorial Approach to Climate Change (TACC) project for the Mbale region of Uganda is being implemented by UNDP and benefits from financial support provided by the Danish Embassy, DFID and UNDP, as well as from technical and development support provided by the Welsh Assembly Government.
- 13) The EAC’s Protocol on Environment and Natural Resources in Chapter 3 has a number of articles with provisions for management of trans-boundary resources. EAC with funding from EU is working through LVFO to harmonize, develop and adopt conservation and management

measures for the sustainable utilization of living resources of Lake Victoria so as to optimize socio-economic benefits from the basin for the Partner States.

- 14) Nile Basin Initiative (NBI) is running various projects, for example, the Water Resources Planning and Management Project (WRPMP). Together with NEMA and with support from EU, the NBI has also supported the restoration of the Semliki river banks through community management zoning of the Semliki River banks.
- 15) The Wetlands Management Department has launched a ***“National Wetland Demarcation Exercise for Uganda”***. The main objective of the demarcation exercise is to clearly delineate and physically mark the boundaries of the wetlands and gazette those that perform critical and vital functions. In addition a framework plan stipulating the ecological, socio-economic and institutional management interventions is to be done. The department is also working with the Department of Fisheries Resources to identify fish breeding hotspots mainly along fish landing sites.
- 16) Icelandic/UNDP support to MAAIF to establish fish handling facilities at landing sites in the country.
- 17) Government policy and legal framework as well as plans and programmes. There are various laws, policies, plans and other frameworks that are relevant to ENRM (Annex III).

Criteria for identification of priority geographical areas and sites

The criteria for identification of the interventions and sites are summarized as follows:

- Preliminary selection of districts of focus and areas using map-based criteria in a GIS. Variables used were biodiversity /hotspots; environmental hotspots; forests, rivers, lakes, wetlands and highland ecosystems; and social-economic indicators (poverty and population density);
- Information from literature on current initiatives and barriers;
- Areas where current initiatives require extension in time and or up-scaling to new areas in the same ecosystem;
- Areas where there are plans and strategies in place or where best practices have been identified for scaling out to the areas of need considered as model sites;
- Areas where there are critical issues but no previous intervention;
- Areas and sites recommended by Environment officers /offices of contact at the selected Districts for consultations;
- Outputs of focus group discussions with communities and CBOs (Annex V); and

- Questionnaire interviews and meetings (Annex IV): The above areas were confirmed by prioritizing through the questionnaire interviews.

Proposed Project Interventions in Priority Geographical Areas and Sites

The proposed interventions are based on study findings from literature review, questionnaire interviews and community focus group discussions following the two key outputs: 1) Mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated and; 2) Key successful sustainable land management (SLM) practices identified and replicated and under each output, result areas are identified at ecosystem level. Under each result area, specific project interventions and sites are summarized as follows:

Output 1: mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated

Result 1.1 Community forestry and private woodlots in Albertine Forests enhanced

Project Intervention	Priority geographical Areas and Sites
Build capacity of communities for community forestry on public and private forest enclaves outside protected forest reserves by strengthening existing associations along Budongo Forest as models for extending the associations to new areas in the Albertine Rift Forest edges: -Strengthening the community forest management committees by establishing meeting forums and training in record keeping, monitoring and evaluation -Implement community forest management plans e.g., enrichment planting, etc.; -Support non- forest destructive enterprises such as bee keeping; -Agro-forestry to provide tree resources and soil/water conservation -Planting of trees in non-farm/woodlot sites such as village paths/access roads to increase tree cover and conservation	Budongo sub-county, Budongo forest edges in Masindi District: Motokayi, Terenge, Ongo, Kanyege, and Ewafara
Promoting tree planting on private land in the Albertine Graben for alternative livelihoods, integrating eco-tourism and ecosystem services: -Sensitization and training of relevant Local District staff and communities in ecosystem and ecotourism concepts oriented to forestry -An integrated ecosystems/ ecotourism plan will be prepared and implemented	Albertine districts of Arua, Nebbi, Nwoya, Buliisa, Ntoroko in selected sub-counties depending on the integrated ecosystems/ecotourism plan

Result 1.2 Biodiversity Conservation and social economic livelihoods in PA-edge communities strengthened

Project Intervention	Priority Geographical Areas and Sites
Integrated tree planting and bee keeping for problem animal control; income and wood fuel for PA edge communities: A site around QENP -Kashoya Kitomi Forest Reserve: up-scaling existing initiatives in Rubirizi District, Kicwamba sub-county and strengthening the current bee keeping initiative to include packaging and marketing of the honey; tree planting to provide for bee hives and firewood needs. Kochgoma Sub-county, Nwoya District to the north of Murchison Falls National Park: Tree planting for wood fuel, and bee keeping for problem animal control especially elephants following the Rubirizi initiative	Kicwamba sub-county in Rubirizi District and other sub-counties bordering QENP –Kashoya Kitomi Forest Reserve boundaries; Kochgoma Sub-county, Nwoya District to the north of Murchison Falls National Park; Buliisa District at Wanseko, and Mubako areas; and

Buliisa District at Wanseko, and Mubako areas where crocodiles and hippos are a major issue: crocodile fences to minimize crocodile attacks. Kasese District in Karusandara Sub-county: tree planting and bee keeping	Kasese District in Karusandara Sub-county
Eco-tourism development in PA –edge community land areas for improved livelihoods: Sango bay Forest edges - in Rakai District based on Sango Bay Forest trails and backcloth industry/Ganda culture based on ficus trees. Eco-tourism development in L. Bisina - L. Opeta Ramsar wetlands in NE of Uganda: The project will involve up-scaling of biodiversity /ecotourism development initiatives building on the concluding COBWEB project in the same site. The site will be linked to Mt. Elgon and Kidepo tourist circuits (under UWA consideration), and sport hunting in the wetlands complex and implementing the management plan that is being developed for the Pian-Upe Wildlife Reserve that incorporates management of the wetlands complex	Sango Bay Forest/wetlands Rakai District ; L. Bisina - L. Opeta Ramsar wetlands in NE of Uganda
Family planning and sensitization for better management of land resources and conservation in PA Edge Communities of Mt. Elgon in Bududa where there are over-populated vulnerable mountain slopes and opportunities to extend the Taungya system being implemented in MENP	Bududa District, Mt Elgon in the sub-counties bordering MENP: Burukyeke, Bunamubi, Bubiita, and Bumayoka sub-counties

Result 1.3 Environmental monitoring and regulation of oil and gas activities in the Albertine Graben strengthened

Project Intervention	Priority geographical areas and sites
Support Albertine District Local Governments to design ordinances and byelaws that help to implement environment laws and regulations related to oil and gas such as the Environment Act, Wildlife Act, EIA guidelines, National Oil and Gas Policy, Petroleum and Petroleum Refinery Bills (2012).	Buliisa and Nwoya Districts
Expand the platform of civil society organizations on oil and gas to create a wider national environmental platform for oil and gas. The stakeholders should include the environmental pillar agencies, District Local governments, local community representatives and private sector engaged in oil and gas industry to develop and implement a comprehensive framework for social responsibility and biodiversity conservation in the Albertine Graben.	National level platform for the whole of Albertine Graben districts

Output 2: Successful Sustainable land management (SLM) identified and replicated

Result 2.1: Integrated water catchment (watershed) management and SLM promoted

Project Intervention	Priority geographical areas and sites
Integrated watershed management for the Semliki River Valley	Semliki River in Bwelamule and Nombe Sub-counties in Ntoroko District; and Bundibugyo District
Landscape restoration along Upper Manafwa River, Mt Elgon	Bududa District
Integrated water resources management and SLM of Mid-stream Lokok river Sub-catchment in Karamoja. Introducing SLM practices in the catchment including: Agro-forestry; afforestation ; mulching; fallowing; low till/ livestock manure; re-vegetation of rangelands; water harvesting, runoff management, small-scale irrigation and gully control measures	Kotido Sub-county , Kotido District; Rupa Sub-county, Moroto District; and Loliktae Sub-county in Napak District
Developing L. Nakivale and L. Kaceera lake restoration in Isingiro and Rakai Districts as model lake catchment restoration sites	Landscape around Lake Nakivale and Lake Kaceera in Isingiro and Rakai Districts
Landscape restoration along the Rwizi River System-Up-scaling river bank zoning of Semliki and introducing SML practices: Agro-forestry, re-vegetation of riverbanks /afforestation, mulching; fallowing; low till/ and livestock manure	Piloting on the river banks and catchment in the Districts of Buhweju, Bushenyi, Mbarara , Kiruhura, Isingiro, and Rakai

Result 2.2: Up-scaling SLM: stepping up to value chains and scaling-out to critical highlands and wetland ecosystems

Project Intervention	Priority Geographical Areas and Sites
Scaling-up on-going SLM projects: Action on lessons and stepping up to value chains	Kamuli, Nakasongora, Isingiro and Rakai Districts
Scale- out SLM techniques in new areas: Highland ecosystems of Kabale, Kisoro and Rwenzori	Kabale, Kisoro and Rwenzori highland ecosystems
Scale-out SLM in landscapes around critical biodiversity wetland ecosystems: The Eastern Kyoga landscapes: Up-scaling the UNDP-IUCN project on L. Bisina-Opeta wetland complex to Awoja, Olweny, Kole, Doho, Namatala and Butaleja wetlands and surrounding landscapes to the Mt Elgon foot-slopes. The priority area will be Awoja wetland in Soroti District: ENRM integrated with SLM practices: low till/livestock manure, runoff control, water harvesting, afforestation, etc. Katonga River wetlands: Community –based wetlands management planning Lake Victoria wetlands Community-based planning for peri-urban landing sites that are fish breeding hotspots	Eastern Kyoga: L. Bisina-Opeta wetland complex and Awoja, Olweny, Kole, Doho, Namatala and Butaleja wetlands. The priority area will be Awoja wetland in Soroti District Katonga river banks and catchment in Sembabule, Lwengo, Masaka and Kalungu Districts Lake Victoria wetland sites: Kasensero landing site in Rakai District; and Musoli and Wairaka landing sites in Jinja District
Develop Kamuli SLM site as a model for adopting integration of biogas energy into SLM initiatives Up-scaling integrated SLM/biogas to Bududa and Isingiro based on lessons learnt from Kamuli model site	<ul style="list-style-type: none"> • Bulawori Sub-county, Kamuli District • Isingiro and Bududa Districts
Mainstreaming gender in SLM for sustainable ENRM: Research undertaken to better understand gender roles, responsibilities and adaption to climate in SLM project areas Capacity in business planning, information and funding (seed or revolving) fund for women who are considerably limited in access to funds to engage in income generating enterprises and SLM interventions Capacity building for the youth in alternative sources of livelihoods, particularly, biodiversity and agro- business projects to relieve pressure on biodiversity and natural resources	Proposed SLM Model sites in Kamuli and Isingiro

Result 2.3: Integration of Management of POPs into Local Government District Development Plans and SLM

Project Interventions	Priority Geographical Areas and Sites
Integration of POPs management into District Development Plans and SLM Practices: Katonga River Catchment. Key actions will include among others; Developing district POPs management plans and incorporate them into District Development Plans	Lwengo, Sembabule and Kalungu Districts. To, to create synergy with the community based Katonga Wetlands Management Plan and SLM activities identified under Result area 2.2
Strengthen Monitoring and regulation of POPs resulting from industrial pollution in Kampala City with focus on Nakivubo Channel and Murchison Bay on Lake Victoria. These are areas affected by industrial effluents and poor handling and disposal of other wastes.	Kampala City Council. Priority will be on the Nakivubo Channel stretching from Kawempe Industrial Area to Murchison Bay

IMPLEMENTATION FRAMEWORK

The framework is presented according to the key project outputs: i) Mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated and; ii) Key successful sustainable land management (SLM) practices identified and replicated. For each output and result area,

the following are highlighted in the logframe (Table 3): Project interventions; sites; institutions identified for implementation; indicators for monitoring and evaluation; and assumptions. Key considerations for implementation include but are not limited to: Capacity of the local communities and District Local Governments; knowledge management and transfer through an information system integrating a spatial database in a GIS; gender dimensions at all the steps of implementation; and monitoring and evaluation. For efficient implementation, a monitoring and evaluation framework is presented, linked to the project sites through indicators presented in the logframe (Table 3).

CONCLUSIONS

1. There are a number of SLM projects that already exist in the areas covered during the scoping study. These, however, have limited spatial coverage due to various reasons e.g. limited knowledge of information transfer techniques and limited capacity in M&E. SLM up-scaling options were best identified where CBOs had better monitoring and evaluation practices, including documentation of progress and lessons learned.
2. Gender issues played an important role in which SLM technology was adopted, where it was implemented (spatial location) and who implemented it. It also had bearing on determining the level of acceptance of a technology or conservation measure by the community.
3. Information on current initiatives has provided a strong basis for the proposed sites. Data and information on lessons learned will be a strong baseline for continuity in the same sites as well as out-scaling to new areas of intervention. Knowledge management of the proposed interventions will be vital and this calls for emphasis on systematic documentation of project management and progress. A management information system coupled with a GIS for documentation, learning, monitoring and evaluation of progress in biodiversity conservation and sustainable land management in Uganda will, therefore, be required.

GENERAL RECOMMENDATIONS

- 1) Increase capacity of CBOs and agencies implementing and coordinating SLM projects:
 - Capacity in M&E. SLM up-scaling options were best identified where CBOs had better monitoring and evaluation practices, including documentation of progress and lessons learned. To enable continuity and project sustainability, M&E practices should,

therefore, be integral to project planning and management. The implementing CBOs, NGOs and coordinating government agencies and departments, however, require training in M&E techniques.

- Capacity in technology development, transfer and implementation through farmer-to-farmer approach: A number of CBOs implementing SLM projects have received training in the technologies through study tours, demonstrations and instruction. Some have innovated new ideas after learning lessons from implementation. The members could help develop new and/or transfer the technologies within and outside of the groups. However, those with first hand training are few and they have limited capacity in transferring what they have learned. The few farmers experienced in SLM techniques need to be trained as trainers to enable sustain SLM with limited dependence on external support.
- 2) Appraise identified projects further through participatory logical framework formulation and implementation
 - 3) Project information dissemination plans and strategy should precede implementation to ensure informed participation by relevant stakeholders
 - 4) Integrated water resources management has received considerable attention in ENRM in Uganda. However, much emphasis is on upstream and downstream areas. More emphasis on midstream areas is needed especially in the arid/semiarid areas interfacing mountainous and adjacent foothills. Most of these areas adjoin wetlands and plains where silting and flooding have escalated by increased rainfall as a result of climate change and variability. This is exacerbated by poor soil and water conservation practices.
 - 5) Supporting gender equity in ENRM: To better understand the complementary roles of different gender groups in ENRM and CCA, more research on gender roles and responsibilities in ENRM and CCA in the hotspot areas should be undertaken.
 - 6) Application of geographic Information systems (GIS) enabled mapping and integration of various criteria for identification of sampling sites and later for mapping current and potential initiatives. The maps and associated database provide a framework for an information system for establishing, monitoring and evaluation of BD/SLM projects. Expansion of the GIS database developed during this study is, therefore, recommended for identification and management of future interventions.

LIST OF ACRONYMS

ARPFOCA	Albertine Rift Private Forest Owners Conservation Association
ADC	Austrian Development Corporation
BMU	Beach Management Unit
CAP	Country Programme Action Plan of UNDP and Government of Uganda on implementation of the National Development Plan
CBARFP	Conservation of Biodiversity in the Albertine Rift Forests of Uganda
CBD	Convention on Biological Diversity
CBNRM	Community-Based Natural Resources Management
CBOs	Community-Based Organizations
DLG	District Local Government
CFM	Collaborative Forest Management
CSOs	Civil Society Organizations
CEAP	Community Environment Action Plan
DFO	District Forest Office (r)
DFR	Department of Fisheries Resources, Uganda
DEO	District Environment Office(r)
DSIP	Development Strategy and Investment Plan (for the Agriculture Sector)
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
ENRM	Environment and Natural Resources Management
FAO	Food and Agriculture Organization
GDP	Gross National Product
GEF	Global Environment Facility
GEF -SGP	Global Environment Facility - Small Grants Programme
GIS	Geographic Information System
GM	The Global Mechanism of UNCCD
GoU	Government of Uganda
GPS	Global Positioning System
ICRAF/AHI	ICRAF/African Highlands Initiative
IUCN	International Union for Conservation of Nature
IFMP	Fisheries Management Plan (IFMP) by LVFO
LVEMP	Lake Victoria Environment management Project
LVFO	Lake Victoria Fisheries Organization
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries

M&E	Monitoring and Evaluation
MENP	Mt. Elgon National Park
MERECp	Mount Elgon Regional Ecosystem Conservation Programme
NAADS	National Agricultural Advisory Services
NAPA	National Adaptation Programmes of Action
NBSAP	National Biodiversity Strategy and Action Plan
NDP	National Development Plan
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NGOs	Non-Government Organizations
NIP	National Implementation Plan - in fulfillment of the 2004 Stockholm Convention on Persistent Organic Pollutants (POPs).
MDGs	Millennium Development Goals
PA	Protected Area
PCBs	Polychlorinated Biphenyls
POPs	Persistent Organic Pollutants
PPPs	Public-Private Partnerships
QENP	Queen Elizabeth National Park
SLM	Sustainable Land Management
SMEs	Small to Medium Enterprises
SS-ENRM	Strengthening Sustainable ENRM project by UNDP
TIST	The International Small Group and Tree planting programme
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
WCS	Wildlife Conservation Society
UNFCCC	United Nations Framework Convention on Climate Change
UWA	Uganda Wildlife Authority
WWF	Worldwide Wildlife Fund for Nature

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1. INTRODUCTION

1.1 CONTEXT AND BACKGROUND

Uganda is endowed with a diversity of natural resources including biological resources of national and international significance. Uganda is also characterized by diverse ecosystems from which various ecosystem services are derived. The major ecosystems in Uganda include river systems such as the Nile River, Katonga, Semliki, etc.; highlands such as Rwenzori, the Virunga Volcanoes and Elgon; lakes including Victoria, Kyoga, Bunyonyi, Albert, etc.; forest ecosystems; and savanna dry woodlands (Winterbottom & Eilu, 2006). Biodiversity ecosystems in Uganda include Lake Victoria, the Albertine region, Sango bay, dry montane forest ecosystems and savanna dry rangelands.

Ecosystems provide a number of services. Ecosystem services have been categorized by the Millennium Ecosystem Assessment to include four broad groups: 1) Provisioning services such as food and water supply; 2) Regulating services such as control of climate and disease; 3) Cultural services such as spiritual, recreational and cultural benefits; and 4) Supporting services, such as photosynthesis, water cycling, crop pollination and nutrient cycling, that maintain the conditions for life on earth (UNEP, 2011). The capacity for the ecosystems to provide such services depends on management (Power, 2010).

The natural resource base is, however, increasingly stressed and degraded due to climate change and variability, and increased population resulting into increased pressure to supply resources and services for livelihoods that include among others food, water, and energy. This is in addition to unsustainable harvesting of resources which poses serious challenges of resource degradation, sustainable ENRM and livelihoods.

Consequently, ENRM concerns have attracted global conservation and environmental efforts mainly through the UN Millennium Development Goals (MDGs); and the UNDP Human development Report 2011, which is focused on sustainability and equity. There are also various conventions on climate change and variability, as well as biodiversity. Focus is also on global human population which is growing at escalating rates yet the natural resources are fixed and the situation is worse for developing countries like Uganda. In Uganda, the annual population growth rate by 2008 was at 3.2 percent at a density of

300 persons per km² (Uganda Population Secretariat, 2009). Furthermore, NEMA (2007) indicates that currently, 'six times as many people are trying to survive on fewer natural resources than there were sixty years ago'. To a great extent the Ugandan economy depends on exploiting natural resources and will remain so for the foreseeable future (NAPA, 2007). It is estimated that over 90% of the population depends directly on natural resources for survival. This over-dependence has, however, exerted immense pressure on the fragile natural resources resulting in ecosystem degradation. This degradation, coupled with climate change and variability has resulted in disasters such as landslides in the mountainous regions of Elgon, Kigezi and Ntoroko; floods in Teso-Karamoja region and various low-lying areas in Uganda, while drought has become rampant in the cattle corridor and the Albertine region.

Land and land use degradation constitutes over 80% of the annual cost of environmental degradation in Uganda (National Land Use Policy, 2007). The various forms of land degradation include among others: deforestation (particularly outside central forest reserves and other protected areas) and forest encroachment; wetlands and swamp reclamation; siltation of water sources and catchment areas; biodiversity loss; loss of soil fertility; decreasing fish stock; and pollution especially water pollution caused by discharge from industries and domestic waste.

Persistent Organic Pollutants (POPs) resulting from point source industrial pollution and non-point source pollution pose a serious threat to the environment, human and wildlife health. The National Implementation Plan (NIP) for Uganda (Republic of Uganda, 2008) indicates that POPs are volatile and evaporate and thus can be transported to where they have not been used in the atmosphere and aquatic ecosystems. They are also discharged directly, or through atmospheric deposition, into waterways and are transported by movement of fresh and marine waters. This results into contamination of ecosystems such as wetlands, rivers, lakes etc., and widespread distribution of POPs across the globe and within countries, thus resulting into non-point source pollution (Republic of Uganda, 2008).

The consequent threats of POPs to both human and wildlife health and the environment attracted global efforts through the UN Stockholm Convention on Persistent Organic Pollutants, (2004) urging countries to urgently take actions to reduce and eliminate releases of the POPs chemicals into the environment. Article 7, the Convention requires Parties to develop National Implementation Plans geared towards taking measures to eliminate or reduce the release of POPs into the environment. The

convention seeks to protect human health and the environment from chemicals. The twelve (12) most dangerous chemicals, nine (9) of which are pesticides) that remain intact in the environment for long periods, become widely distributed geographically and accumulate in the fatty tissue of humans and wildlife, (Republic of Uganda, 2008).

Therefore, sustainable management of the natural resources and the environment is important and critical to Uganda's long-term development. To address the above ENRM issues GOU and UNDP agreed on a Country Programme Action Plan (CPAP) 2011-2014 to guide development and delivery of projects that respond to the National Development Plan 2010/11-2014/15¹. The projects focus on the areas of sustainable land management, management and control of POPs, natural resources management and climate change adaptation and mitigation. To intervene in the escalating environmental degradation and natural resources management, UNDP in partnership with WWF developed the "Strengthening Sustainable Environment and Natural Resources Management, Climate Change Adaptation and Mitigation in Uganda" project.

The scoping study is to identify a focus for the UNDP/WWF project in terms of areas/sites, stakeholders (local governments, CSOs, and communities) and approaches to strengthen capacities to sustainably manage and utilize natural resources as well as integrating climate change adaptation and mitigation in NRM activities. This study addresses biodiversity and sustainable land management (SLM).

1.2 BIODIVERSITY CONSERVATION IN UGANDA

With the diversity of ecosystems such as forests, woodlands, savannas, wetlands, open water and mountain ecosystems, Uganda is renowned for its biodiversity. Biodiversity conservation in Uganda is undertaken through an established protected area (PA) system (Figure 1). The PAs include 10 National Parks, 10 Wildlife Reserves, 6 Wildlife Sanctuaries, 10 Community Wildlife Areas, 506 Central Forest Reserves, various Local Forest Reserves and about 12 wetland Ramsar sites. Some national parks, e.g., Bwindi Impenetrable National Park and Rwenzori Mountains National Park are gazetted as world

¹ Strengthening Sustainable Environment and Natural Resources Management, Climate Change Adaptation and Mitigation in Uganda Project

heritage sites while Queen Elizabeth National has been gazetted as a Man and Biosphere Reserve. In addition there are about 34 Important Bird Areas (IBAs²).

The management of Uganda's rich biological diversity in terms of species and ecosystems is, however, highly influenced by various factors including socio- cultural, population, economic, political and global factors. Consequently, one of the most important biodiversity areas in the country, the Albertine Rift, is globally classified by Conservation International as a biodiversity hotspot, being part of the Eastern Afromontane Hotspot. The classification was initiated by Norman Myers in 1988 who first identified ten tropical forest "hotspots" characterized both by exceptional levels of plant endemism and by serious levels of habitat loss. Currently, to qualify as a hotspot, a region must meet two strict criteria: 1) it must contain at least 1,500 species of vascular plants (> 0.5 percent of the world's total) as endemics, and 2) it has to have lost at least 70 percent of its original habitat³. Characterization of global hotspots by Conservation International (2005) identifies the hotspots within Uganda as part of the Eastern Afromontane which includes the Albertine Rift⁴. The Albertine Rift biodiversity hotspot poses conservation challenges, which, in addition to the various social-economic threats to the rich biodiversity within and outside the PA system require urgent attention.

² IBAs are defined by Nature Uganda as sites of global conservation importance identified using birds to locate key sites for conservation across the globe.

³ Conservation International. Hotspots Defined.

http://www.conservation.org/where/priority_areas/hotspots/Pages/hotspots_defined.aspx

⁴ Conservation International. Hotspots Revisited.

http://www.conservation.org/where/priority_areas/hotspots/hotspots_revisited/Pages/hotspots_revisited.aspx

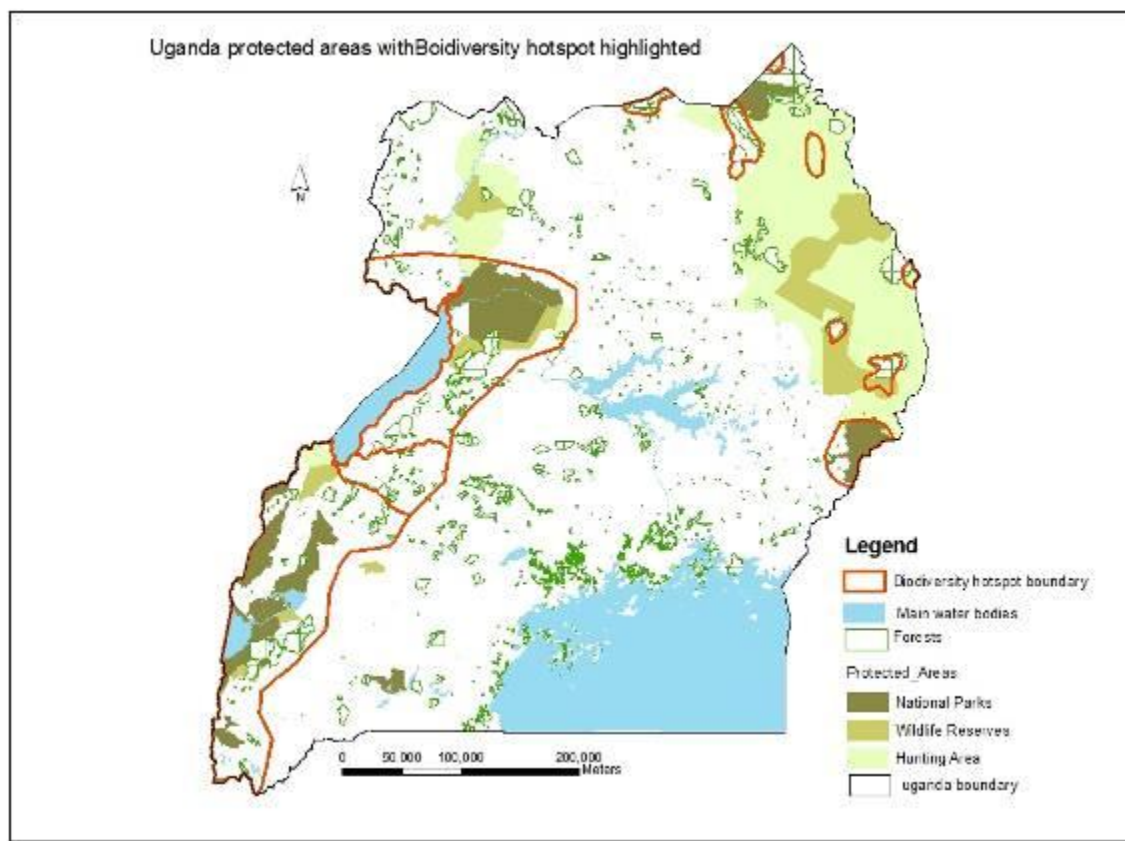


Figure 1: Biodiversity Conservation Areas and Hotspots in Uganda

For Uganda to address the biodiversity conservation challenges, a wider framework that unifies the PA system management and the social economic livelihoods is implemented through the Uganda National Biodiversity Strategy and Action Plans (NBSAPs). For example, by focusing the strategy on Article 6 of the CBD, “General measures for conservation and sustainable use” the country ensured sustainable livelihoods of the people in line with poverty reduction objectives while satisfying global obligations. This is coupled with a specific objective on strengthening the role of communities in biodiversity management, a policy that has been taken up by conservation agencies and development partners. In this study, therefore, the role of communities in biodiversity conservation is linked to enhancement of community livelihoods.

The NBSAP also recognized the presence of viable species populations outside protected areas and presented one of the objectives to focus on strengthening biodiversity management outside protected areas. This is related to the Land Act on providing opportunities for both the Central Government and Local Authorities to establish a protected area in public interest. Secondly, the Land Act and other

related legislation empower the common person to own and manage biodiversity outside Protected Areas thus, cultivating a sense of ownership and responsibility towards biodiversity and national heritage. In this study, therefore, opportunities for biodiversity conservation outside protected areas were identified as a key criterion for selection and locating of project interventions.

1.3 SUSTAINABLE LAND MANAGEMENT (SLM) FRAMEWORK AND PRACTICES

Sustainable Land Management (SLM) is defined according to the TerrAfrica partnership (2005) as the adoption of land use systems that, through appropriate management practices, enables land users to maximize economic and social benefits from the land while maintaining or enhancing ecological support functions of land resources (FAO, 2009). SLM can also refer to “any intervention that is aimed at sustaining or restoring the productive capacity of land, including cropland, rangeland, and forested land, to deliver public and private goods. In agriculture, sustainable land management is the maintenance over time of soil productivity. This requires the combination of soil fertility treatment (application of mineral and organic fertilizers to the soil) with soil and water conservation measures (implementation of agronomic, soil management and physical measures such as contour ridging, terracing, tied ridges or providing ground cover through mulching, use of plants, leaving crop residues). SLM will focus more on some elements of this combination depending on the terrain, ecosystem, climate and land use which determine the potential forms of degradation (FAO, 2009). Annex I highlights details of SLM practices that may be applied.

Sustainable Land Management (SLM) in Uganda is implemented under inter- sectoral cooperation framework that was formed in 2007. According to Muwaya (2011), the framework is lead by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and supported by TerrAfrica / WB, FAO and UNDP. The country platforms include: The Inter-Ministerial National Steering Committee composed of Permanent Secretaries of the five sectors; The National Technical Working Group (SLM-NTWG) composed of technical officers from the five sectors; Sector Working Groups; The National SLM Multi-Stakeholder Forum; The CSO – SLM Network composed of CSOs, etc., and led by PELUM (Participatory Ecological Land Use Management NGO); and the SLM Coordination Unit in MAAIF. The Investment Framework was developed as part of the NDP and its specific Agricultural Sector Investment Plan (DSIP). Thus, the CSIF has a 10-year (2010-2020) horizon organized in two-five year phases as per the national

planning process. The SLM framework was designed to be applied initially in four land degradation hotspots across the country. These are:

- The Dry Lands /the Cattle Corridor,
- The Highlands – Eastern and Southwestern Highlands,
- Eastern and Northern Uganda,
- Lake Victoria Crescent Region,

Implementation initiatives include the UNDP project to mainstream Sustainable Land Management in six cattle corridor districts of Uganda at national level, to strengthen the United Nations Convention to Combat Desertification (UNCCD) and National Action Plan (NAP) Focal Point Office in the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) in implementation of the National SLM Investment Framework. Other initiatives include the ICRAF coordinated project on “Enhancing the adaptive management capacities of rural communities for sustainable land management in the highlands of eastern Africa”. In Uganda the project includes the “Benet landscapes” on Mt Elgon. Drawing on lessons learned within the current project areas and intervention needs of other degraded landscapes, this study identified opportunities for up-scaling and out-scaling the SLM initiatives.

1.4 Management of Persistent Organic Pollutants in Uganda

Persistent Organic Pollutants (POPs) are chemical substances that persist in the environment, and bio-accumulate through the food web, posing a risk of causing adverse effects to human health and the environment⁵. POPs include: industrial chemicals such as Polychlorinated Biphenyls (PCBs); pesticides; herbicides; insecticides; some fertilizers; DDT; and by-products such as polychlorinated dioxins and furans (resulting from burning of wastes). POPs are in high concentrations at higher levels in the food chain, thus, humans, and wildlife are at high risk of exposure to POPs for extended periods of time and spanning generations, resulting in chronic toxic effects. POPs can be passed from mother to child and are known to have significant negative immunological, neurological and reproductive health effects (Republic of Uganda, 2008).

In Uganda POPs result from industrial waste (through direct discharge of effluents especially in Lake Victoria and River Nile) in the Industrial cities of Kampala and Jinja and other urban areas. POPs also result from use of agrochemicals in agricultural and livestock production, by-products from waste

⁵ United Nations Environment Programme; www.chem.unep.ch/pops

disposal through burning, power generation, etc, (ENGO-LOG, 2005). The 2007 NEMA inventories of the status of POPs in Uganda established that POPs, i.e. PCBs, pesticides, DDT and byproducts such as polychlorinated dioxins and furans, occur in Uganda and they are being proliferated due to inadequate and inappropriate management practices.

The inventory for PCBs in Uganda estimated that 12.5 percent of the transformers sampled (a total of 159 countrywide) had PCB contaminated oil to levels in excess of the national threshold of 50 ppm (NEMA 2007 in the Republic of Uganda, 2008). PCB pollutants find their way into the environment through accidental spillage and leaks from old PCB transformers' contaminated equipment; stolen transformer oil within the distribution network, which is then reportedly used for welding, hair products and treatment of wounds; and transformer oil used as a lubricant, cutting oil, and PCBs used in the manufacture of insecticide, plastics, rubber, paints and vanishes. Scenario analyses of PCB risks suggest that the risk of exposure is likely to increase from just 17,640 persons in 2008 to about 141,120 by 2025, (NEMA 2007 in Republic of Uganda, 2008)

The estimated total release of unintentional persistent organic pollutants in Uganda was 1,018.76776g TEQ/a (Republic of Uganda, 2008). These releases were from; waste incineration; ferrous and non-ferrous metal production; household heating and cooking with fossil fuels; uncontrolled combustion processes from domestic waste burning and burning of agricultural residues; leather industry; lead production, brick production, diesel fumes, accidental fires, etc,. Over 70 percent of the dioxins and furans emissions were found to result from uncontrolled combustion from open burning (NEMA 2007).

Use of pesticides, herbicides insecticides imported into Uganda to prevent proliferation of pests and diseases, and in livestock production exposes farmers to health risks through handling (improper handling of agrochemicals without protective gears), application, use, storage and disposal (UNDP-GEF, 2002). It is estimated that over 2,224 tonnes of pesticides are imported annually (Republic of Uganda, 2008). Other studies (ENGO-LOG 2005) indicate that there are over 300 pesticide formulations in use in Uganda showing a significant and varied load of toxic chemicals on the environment with a corresponding variety of health effects. Many of the pesticides that have been intensively used over long periods in Uganda are organochlorine which are well known for their persistence and accumulation in the environment, hence the POPs, ((UNSPIN, 1993) in ENGO-LOG 2005).

Use of pesticides like DDT (banned in many countries where the agricultural market exists) has a potential negative economic impact to farmers as they will lose the organic export market niche which has been built for the Ugandan agricultural products. The Ministry of Health used DDT in the Indoor Residual Spraying programme for control of Malaria in the districts of Apac and Oyam. By the time the programme was halted in 2008, about 3,000 tonnes of DDT had been used and deposited in the environment (Republic of Uganda, 2008).

In fulfillment of Article 7 of the Stockholm Convention, Uganda as a party to the Convention developed a National Implementation Plan, (NIP), in 2008 for managing the POPs. The NIP for Uganda prescribes the following actions for management of POPs;

- Government/Ministry of Health to instill measures to track and monitor the use of insecticides when using DDT in the Indoor Residual Spraying (IRS) programme for control of Malaria
- Harmonization of environment laws on priority hazardous wastes especially POPs
- Making sure that all PCB transformers are marked, all transformers should be leak proof and transformer stations and storage sites that contain above 50 ppm of PCBs licensed and notified
- Institute regulatory and non-regulatory measures for managing POP pesticides that include strengthening legislation, coordination among institutions, and enhancing technical and infrastructural capacity for handling, storage, use and elimination.
- Reduction or where possible, elimination of emissions at the source through application of Cleaner Production, and adoption of Best Available Techniques (BAT) and Best Environment Practices (BEP) for managing unintentional persistent organic pollutants.

Various implementation of POP management activities are going on in the country in line with priority areas identifies in the NIP for Uganda, such as the Lake Victoria Environmental Management Project Phase II.

1.5 ENABLING POLICY AND LEGAL FRAMEWORK FOR ENRM

The government of Uganda recognized the importance of sustainable environment and natural resources management and put in place a number of policy and legal frameworks to support/facilitate implementation of ENRM initiatives. In addition to the policy framework, government initiated institutional reforms, national strategies and action plans aimed at strengthening the institutional framework in the environment sector for effective implementation and monitoring of ENRM programmes.

The relevant policies, laws and other frameworks for sustainable ENRM include among others: the National Environment Act (cap 153), the National Environment Management Policy, the National Development Plan, the National Environment Action Plan, the National Implementation Plan for POPs, the Forestry Plan and the Wetland Sector Strategic Plan. Annex III presents details of the relevant policies, laws, national strategies and action plans for ENRM that are in place.

1.6 OBJECTIVES OF THE ASSIGNMENT

1. Identify key ENRM issues and gather data in biodiversity and environmental hotspots.
2. Verify and map ongoing and planned land management, biodiversity and ecosystem services initiatives and identify gaps for project interventions.
3. Based on the key ENRM issues identified and mapped, select priority geographical areas and sites for project interventions based on impacts of sustainable natural resource and land management issues. This will take into account priorities expressed in national plans and strategies, and the presence of complementary programmes and projects.

2. METHODOLOGY

2.1 SCOPE OF STUDY

The study focused on the following:

- Identification of issues in sustainable NRM focusing on sustainable land management including biodiversity conservation and degraded ecosystem focusing on technologies, approaches and mapping of land use systems. Other issues that were considered are barriers and gaps to implementation of ENRM initiatives regarding information, institutional and stakeholders' capacity to manage natural resources at local levels.
- Geographical location/site identification of project interventions
- Defining time frame of interventions in the selected sites.

2.2 OVERVIEW OF THE APPROACH AND METHODS

Activities and methods have been identified according to each objective (Section 1.5)

Table 1 Activities and methods for the study presented for each objectives

Activities	Methods
Objective 1: Identify key ENRM issues and gather data in biodiversity and environmental hotspots	
1. Assess the magnitude, seriousness and intensity of conservation of biodiversity, natural resource and sustainable land management issues and the actions taken by the people concerned and affected by it.	<ul style="list-style-type: none"> • Review of literature, maps and statistics including biodiversity assessment report⁶, Uganda Atlas of Our Changing Environment, National Environment Action Plan, National Development Plan, Land Sector Strategic Plan, National Forest Plan, Plan for Modernization of Agriculture, Agriculture Sector Development Strategy and Investment Plan, Wetlands Sector Strategic Plan, Water Policy, MAAIF SLM project reports, etc.,
	<ul style="list-style-type: none"> • Questionnaire interview with key stakeholders at National Level (UWA, NEMA, MAAIF, NFA, Collage of Agricultural and Environmental Sciences, Makerere University, NPA, MWE – including Wetlands Management Department and Forest Sector Support Department, UNDP project managers, WWF, WCS and IUCN) • Questionnaire interviews with selected Districts technical staff, key CSO and private sector players at District level.
	<ul style="list-style-type: none"> • Field reconnaissance surveys targeting key ecosystems that exhibit biodiversity conservation and sustainable land

⁶ IRG, 2006, Uganda Biodiversity and Tropical Forest Assessment. Produced for the United States Agency for International Development (USAID).

Activities	Methods
	<p>management issues especially degradation and restoration efforts.</p> <ul style="list-style-type: none"> • Consultation meetings/focus group discussions with key stakeholders and representatives beneficiaries of on-going ENRM initiatives at local level. Special focus was on: highlands exhibiting vulnerability; biodiversity hotspots especially the Albertine Rift; Arid/semi-arid areas (the cattle corridor); forests; wetlands, and river systems.
Objective 2: Verify and map ongoing and planned land management, biodiversity and ecosystem services initiatives and identify gaps for project interventions	
Review and identify gaps in sustainable NRM particularly in the context of land management, biodiversity conservation and ecosystem services.	<ul style="list-style-type: none"> • Review of existing relevant documentation. • Review of multilateral donors and development partners' support initiatives and project documents, these included among others Government Agencies (UWA, NFA, NEMA, Wetlands Department, Directorate of Water Resources Management), Strategic Programmes, and Resource Management Plans such as Protected Areas Management Plans, Wetlands Management Plans, • Review of District Development Plans and Environment Action Plans
	<ul style="list-style-type: none"> • Consultation meetings/focus group discussions at District and community (Sub-county and Parish) level with key representatives of community organizations and institutions including Community-based organizations, women's organizations and local NGO involved in sustainable natural resources and land management approaches.
	<ul style="list-style-type: none"> • Use of GIS and Global Positioning System (GPS) to map project sites and build a database of projects and activities and initiatives by different stakeholders.
Identify capacity gaps of various stakeholder groups to sustainably manage natural resources, land, and ecosystem restoration interventions	<ul style="list-style-type: none"> • Questionnaire /Interviews with key informants in selected District and Sub-counties Local Governments, CSOs and Private Sector/SME officials • Focus group discussions with community representatives and stakeholders at sub-counties, Parishes of CBOs, CSOs and local NGOs involved in ENRM initiatives. • Review of Strategic and Business Plans of the ENRM sector institutions such as UWA, NEMA, NFA, NPA) and District Environment Action Plans.
Identify and assess the strengths of key stakeholders (private sector, civil society and community based organizations), their desired role and responsibilities in sustainable NR and land management, conservation of biodiversity and ecosystem restoration, and possible partners that the project should collaborate with during implementation of the interventions in order to achieve the desired project outputs.	<ul style="list-style-type: none"> • Stakeholder focus group meetings in selected Sub-counties and Parishes within selected Districts

Activities	Methods
Objective 3: Based on the key ENRM issues identified and mapped, select priority geographical areas and sites for project interventions based on impacts of sustainable natural resource and land management issues. This will take into account priorities expressed in national plans and strategies, and the presence of complementary programmes and projects	
Develop clear criteria for selection of project sites and geographical location based on priorities of Government, UNDP and WWF, and propose geographical areas and sites for particular interventions, (i.e. district, sub-county, etc.).	<ul style="list-style-type: none"> • Development of criteria for selection of project sites and geographical focus was based on the constraints, gaps and opportunities identified above, issues of sustainable land management, biodiversity conservation and restoration of degraded ecosystems. • Ranking and weighing of the above identified issues was done in line with the priorities expressed in national plans and strategies. National Plans and strategies considered among others, were the National Development Plan, National Forestry Plan, National Biodiversity Strategy and Action Plan, National Environment Action Plan, Land Sector Strategic Plan and Wetlands Sector Strategic Plan. • In line with the 2011 Human Development report the criteria also included equity and gender considerations.
Validation of outputs	<ul style="list-style-type: none"> • Presentation to a validation workshop involving key representatives of stakeholders in natural resource and land management, climate change mitigation and implementing partners.

2.3 REVIEW OF DOCUMENTATION

Review of documentation was undertaken to capture secondary data on ENRM issues regarding the magnitude, seriousness and intensity of resource use and their impacts on the ecosystems, the natural resources and sustainable land management initiatives by government, stakeholders and partners. Document review helped to establish the actions being taken by the communities and people concerned and affected by ENRM issues at the local level. The review also aimed at establishing capacity needs and gaps for sustainable natural resources management initiatives at implementation level among stakeholders and institutions within the ENRM. Some of the needs and gaps identified through review of sector plans and strategic programmes of institutions such as UWA, NEMA, NFA District NR departments, include skills requirements, planning and management capacity, logistics and technical needs, human resources, enabling environment and governance issues.

The document review also helped to establish the achievements made by past and current ENRM initiatives and the challenges faced so as to inform the scoping study on recommendations for project interventions and scaling up of activities.

2.4 CONSULTATIONS AT NATIONAL, DISTRICT AND COMMUNITY LEVELS

2.4.1 National Level consultations

Using a questionnaire interview and checklist, the key informants and resource persons in the ENRM sector institutions; line ministries in charge of wildlife, water, and environment, agriculture, lead agencies; NEMA, UWA, NPA, Wetlands Department were consulted. Relevant International and regional institutions were selected at this level as well. The consultations at this level focused on policy and strategic issues that influence and have implications on ENRM and sustainable land management initiatives both at national and local levels. Other aspects of information targeted at this level were experiences of stakeholders, challenges of sustainable environment and natural resources management and recommendations for improving current ENRM activities and for future initiatives.

2.4.2 Selection of areas of focus for the study at District and Parish levels

1) Selection of Districts of focus for consultations

The following spatial criteria were used in the selection of districts of focus

- 1- Biodiversity hotspot especially the Abertine Rift which is part of Eastern Afromontane at international level (Figure1)
- 2- Degraded ecosystems such Mt Elgon forests, Lake Victoria wetlands and forests
- 3- Restoration/SLM efforts
- 4- Highland areas: Mt Elgon, Rwenzori Mountains, Kigezi highlands, etc.
- 5- Dry lands (the cattle corridor) exhibiting vulnerability,
- 6- Forest ecosystems
- 7- Water catchments
- 8- Wetland ecosystems: The wetland layer of 2008 had the typical classes: papyrus, swamp forest, sedges. These were selected for analysis leaving out grassland and farmlands.
- 9- Socio economic indicators (population density, 2002 and poverty levels (poverty density, 2005⁷ comprising the number of poor people per Km²)

Annex II presents the criterion maps that were used.

⁷ <http://www.wri.org/map/uganda-poverty-density-rural-subcounty-number-people-below-poverty-line-square-kilometer-2005>

A Geographic Information System (ArcGIS 10) was used to extract the final map of combined criteria from which the districts were selected. A district was selected if; a biodiversity hotspot (Eastern Afromontane at international level⁸) or wetland or forest reserve, or protected area and poverty levels were high and poverty density (number of poor people per km²) was high. Attribute tables of the criteria maps were joined into one layer then the following query executed:

“hotspots_revisited_2004_poly.LEGEND” = ‘Eastern Afromontane’ OR “Forests_selected.PSUBJ” = 4020 OR “Wetlands2008.Class_Name” = ‘Papyrus’ OR “Wetlands2008.Class_Name” = ‘Swamp forest’ OR “Wetlands2008.Class_Name” = ‘Grassland’ OR “Protected_Areas.PSUBJ” = 4022 OR “Protected_Areas.PSUBJ” = 4023 OR “Protected_Areas.PSUBJ” = 4024 AND “Pop_2002.POP_DENSIT” > 2097.56 AND “Ug_Rural-Poverty2005.pov_dens” > 97.59

Figure 2 shows the map that was generated for selection of districts and community level consultations.

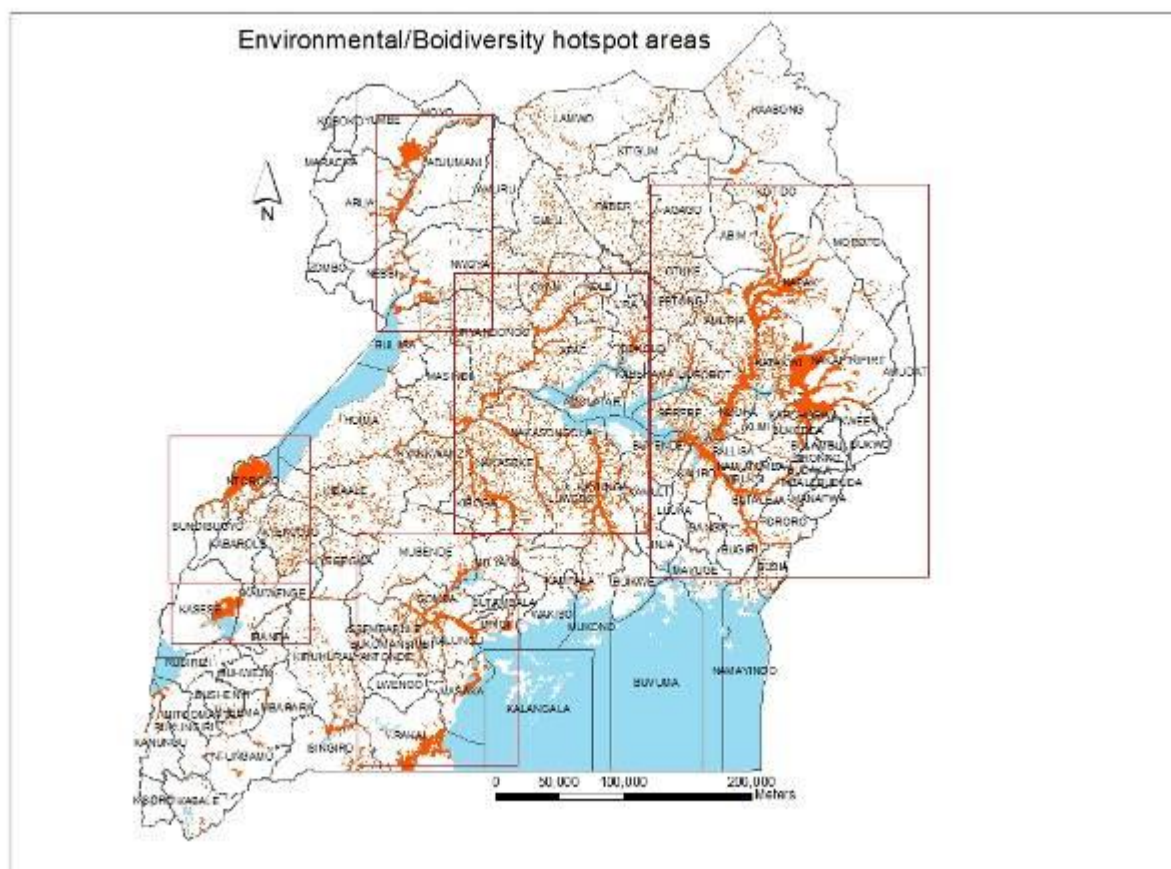


Figure 2: Identified areas of focus based on selected biodiversity, key ecosystems and human indicators

⁸ Map of biodiversity Hotspots by Biodiversity International, 2005

Based on the resultant map (Figure 2) and purposive selection including sustainable land management initiatives, 19 districts of focus were selected as shown in Table 2.

Table 2 Selected districts of focus

District	Criteria for selection
1- Arua	Map Figure 2/Albertine Rift /River Nile Ecosystem
2- Buliisa	Oil and gas development /Albertine Rift Biodiversity hot spot
3- Hoima	Oil Gas development /Albertine Rift Biodiversity hot spot
4- Masindi	Oil and Gas development /Albertine Rift Biodiversity hot spot/Forest Ecosystem (Budongo)
5- Ntoroko	Map Figure 2/ Highland area /Albertine Rift Biodiversity hot spot
6- Kasese	Map Figure 2//Albertine Rift Biodiversity hot spot/Fisheries
7- Rubirizi	Map Figure 2//Albertine Rift Biodiversity hot spot
8- Mitooma	Map Figure 2//Albertine Rift Biodiversity hot spot
9- Kabale	Highland area
10- Nakasongola	Map Figure 2/degradation /Cattle corridor /SML project
11- Isingiro	Millennium village/degradation /Cattle Corridor
12- Rakai	Map figure 2, especially Sango Bay biodiversity area /Lake Victoria /Cattle corridor
13- Sembabule	Map figure 2/Cattle Corridor /POPs/Wetlands issues
14- Soroti	Map figure 1/ Flooding in the south and drought in the north /Lake Kyoga /wetland ecosystem /Fisheries
15- Kapchorwa	Map Figure 2/Highland area/water catchment /Forest management /degradation
16- Bududa	Map Figure 2/Highland area/Landslides /MERECP
17- Napak	Map figure 2/Cattle corridor/Biodiversity hotspots
18- Kotido	Map figure 2/Livestock management /Cattle corridor
19- Kamuli	Cattle Corridor/SML project area where Environment Action Plan has been undertaken/Lake Victoria –Kyoga –Nile interface
20- Nwoya	Northern war recovery area with resettlement and intensive land opening by IDPs returnees. Rampant loss of forest and vegetation cover and settlement of wildlife corridors/dispersal areas
21- Kampala	POPs /Urban wetlands issues
22- Jinja	Fish breeding (landing site) hotspots /Urban wetlands issues

The districts of Hoima, Mitooma, Kabale, Kapchorwa, Napak, Kampala and Jinja were omitted from the field consultations upon discussions and agreement with WWF. This was partly due to logistics and overlap of ENRM and ecosystem representation issues. A total of 15 districts were included for field consultations. However, information on the districts that were not selected was obtained from questionnaire administration by email, existing literature and stakeholder meetings.

2) Selection of Sub-counties and Parishes

From each of the 15 districts selected, 1 Sub-county and 1 Parish were selected from each of the on-going sustainable ENRM projects and programmes. Other criteria used to select sites for community consultations were; the magnitude and intensity of the ENRM issues and guidance from the District offices, especially Environment Officers. The total sample of 15 Parishes was selected for the consultation meetings.

The following participants were selected for Parish focus group discussions/meetings: 1) LC III Chairperson; 2) Sub-county Chief; 3) Sub-county Development Officer (SDO); 4) Parish Chiefs; 5) representatives of Elders, Women and Youth, Women's groups, Farmer groups – NAADS, Parish executive committee, and parish councilors; 6) LC 1 chairpersons, LC II chairpersons and Parish chiefs; 7) Local Environment committees; 8) representatives of key resource users ; and 9) Representatives of NGOS, CBOs, SMEs and development partners working in the area. The Sub-county consultations were catered for by representation of the LC III Chair person, Chief and SDO.

2.4.3 Consultations by questionnaire interviews at District level

The consultations at District Level were by questionnaire interviews. Respondents at District level included but were not limited to the following officials:

- District Local Government Representatives- technical staff (District Planner, NR Coordinators, Heads of NRs departments etc.,) and political representatives;
- National and International NGOs implementing NRM activities at the local level;
- Local NGOs; and
- International Research organizations relevant to SLM and sustainable natural resources management.

The questionnaire addressed the following information:

- ENRM activities that were being undertaken by the districts;
- Existing strategic plans for NRM and ecosystems management;
- Limitations for developing and implementing sustainable environment and natural resources management initiatives;
- How the districts were implementing or involved in Sustainable ENRM initiatives;
- Capacity needs and limitations for mainstreaming climate change and variability issues in ENRM;

- Any existing strategies for climate change adaptation and mitigation;
- Priority biodiversity hotspots and ecosystems that need management to address ENRM issues;
- Recommended adaptation and mitigation strategies, and sustainable ENRM interventions; and
- Consideration of the NRM priority issues for Local Government that need specific interventions and what can be delivered through this project and through other projects and Government programmes.



Plate 1: Consultations with Kasese District & QENP staff

2.4.4 Focus group discussions at Parish /Sub-county level

A checklist was used in focus group discussions/meetings for Sub-county and Parish level consultations. Through the checklist questions, the communities identified key NRs, biodiversity /ecosystem resources and prioritized issues affecting their management and use. In the consultation meetings communities also identified issues affecting implementation of ENRM initiatives (e.g., information, technologies, institutional capacity, etc.,) at district and sub-county levels. The following were also examined in the focus group discussions:

- Key constraints that hinder the achievement of sustainable NR and land management;
- How the constraints can be addressed by the project;
- Ability of communities to adapt to the impact of climate change and variability and ecosystems change;
- Gaps and capacity needs of communities to effectively engage in sustainable NR and land management; and

- Prioritization of actions, timeframe, the lead and other stakeholders responsible for implementation of recommended interventions and possible partners.



Plate 2: Focus group discussion in Miriwara village , Romrom Parish, Kotido Sub-county , Kotido district (Left) and a woman stressing a point during the same discussion (Right)



Plate 3: Consultations with Sub-County officials at Bweramule S/C , Ntoroko District (Left) and community discussions in Ngwedo Parish, Buliisa District (Right)

2.4.5 GPS mapping and Map information analysis

During community consultations, Global Positioning System (GPS) was used to map field consultation and project sites, and a GIS (ArcGIS 10) used to build a database of projects, activities and initiatives by different stakeholders. Additional land management initiatives were derived from the questionnaire interview, existing documentation and maps.

2.4.6 Analysis of data from questionnaire and focus group discussions

Primary data comprising of 83 questionnaire respondents (from national Government institutions, Partners, CSOs, SMEs, NGOs and District Local Governments) was compiled in Microsoft ACCESS and analyzed both qualitatively and quantitatively in SPSS and Microsoft Excel. The results were then compiled into graphs, pie charts and frequency tables.

Data from stakeholders and focus group discussions was compiled according to key issues that emerged from the responses and discussions. The key issues were then synthesized into themes as per the objectives of the study presented in the TORs as follows: Magnitude, seriousness and intensity of conservation of biodiversity; natural resource and sustainable land management issues and the actions taken by the people concerned and affected by it; identification of gaps for project interventions; and identification of strength and capacity needs for stakeholders to sustainably manage natural resources and ecosystems restoration interventions were extracted.

The results of the statistical analysis of data from the questionnaire and focus group discussions were then combined with information from document review. Also a GIS database on biodiversity conservation and SLM intervention sites was derived from the MS. ACCESS files and established in ArcGIS.

2.4.7 Validation workshop

The initial findings of the scoping study were presented in a stakeholders' workshop for validation. The workshop aimed at collecting more views and information from stakeholders including those that were unable to participate in the previous consultations. The relevant views and information gathered in the workshop were then incorporated into the final report.

3. FINDINGS OF THE STUDY

3.1 KEY ENRM AND CLIMATE CHANGE ISSUES IN BIODIVERSITY & ENVIRONMENTAL HOTSPOTS

This section presents findings of key ENRM issues in the areas of focus showing the specific ecosystem type that were covered by the study, the uses and services to the local people, and the resulting impacts. The section includes climate change and variability issues since they relate to adaptive land management practices. Environment, natural resources and climate change and variability issues within biodiversity and environmental hotspots in Uganda are considered to relate to how the land resources are utilized. The main issues are highlighted as follows:

i) **Conservation of threatened species in biodiversity hotspots:**

A *biodiversity hotspot* is a bio-geographic region with a significant reservoir of biodiversity that is under threat from humans. Communities consulted in this study indicated biodiversity hotspots of the Albertine Rift as comprising Queen Elizabeth National Park, Lake George Ramsar site, Kashoha-Kitomi and Kalinzu central forest reserves, Bunyaruguru crater lakes in the districts of Kasese and Rubirizi respectively; Murchison Falls National Park, Victoria Nile Delta on Lake Albert, Lake Albert, and oil and gas areas in Buliisa and Nwoya districts. The convention on Biological Diversity highlights key biodiversity hotspots in Uganda⁹ as follows: Mgahinga Gorilla National Park (Mountain Gorilla (*Gorilla berengei*) and other regionally and globally important species); Bwindi Impenetrable National Park (Mountain Gorilla (*Gorilla berengei*) and other regionally and globally important species); Rwenzori Mountain National Park (Bay duiker (*Cephalophus leucogaster*)); Sango Bay wetland and forest ecosystem (Biodiversity of global importance); Kibaale National Park (Regional and globally endemic species); Dry mountains of Karamoja- Napak, Kadam, Timu, Morungole, Moroto (Regional and globally endemic species); Lake Victoria (Cichlid and Nile perch species (alien species invasion)); Papyrus Swamps of Lake Edward, George and Bunyonyi (Endemic papyrus (*Chloropeta gracilirostis*)); Mount Elgon National Park (Regional and globally endemic species).

From focus group discussions, the major uses and ecosystem services in the Albertine biodiversity hotspots include fuel-wood collection from the national parks (for domestic use and fish processing), water supply, crop cultivation, fishing, grazing and charcoal burning. The major

⁹<http://www.cbd.int/countries/profile.shtml?country=ug> . Downloaded May 18, 2012

ENRM issues highlighted in the Albertine biodiversity hotspot areas were (i) community-park issues mainly human wildlife conflicts arising out of crop raiding, human injuries and poaching resulting into arrests. Reduced tree cover outside the conservation areas and increased pressure for trees resources from inside the protected areas, encroachment, limited or lack of benefits to the communities from the national parks. ii) Pollution of Lake George Ramsar Site mainly from the adjacent KCCL industry discharge from the tailing dam along Kasese-Mbarara road and Kilembe Mines discharge into river Nyamwamba. A new KCCL tailing dam is being constructed next to the park and it is feared that it may lead to further pollution of Lake George.

ii) Expansion of agriculture on previously forested steep terrains:

This has led to soil erosion, which has resulted in the silting of rivers and lakes and the loss of water catchment areas. This mode of land degradation has seriously affected many areas in Mbale, Kapchorwa, Kisoro, Kanungu, Kasese and Kabale;

iii) Sustainable land management within Land degradation and desertification hotspots:

The Global Mechanism of UNCCD (GM-UNCCD) identifies these areas as comprising of the semi-arid and arid zones commonly referred to as the Cattle Corridor, renown for livestock grazing. There are five major land degradation/desertification hotspots in Uganda: the southwestern highlands, the Lake Victoria crescent region, the northwestern region, the eastern highlands, and the southwestern portion of the Cattle Corridor. The areas are threatened by overgrazing, overharvesting of biomass resources for fuel-wood, and climate change and variability. Consequently the areas experience soil nutrient depletion, leading to a loss of soil fertility and productivity; habitat degradation that is threatening the survival of some rare biodiversity, and loss of forest cover. .

Consequently there has been concerted effort in landscape restoration and SLM targeting the cattle corridor. Landscape and SLM initiatives were found in Nakasongola, Isingiro, Kasese, Kamuli, and Sembabule Districts. Ecosystems affected by environmental degradation in these districts are mostly hills, wetlands, lakes for example Lake Kyoga in Nakasongola and Nakivale in Isingiro. There is degradation of arable land and rivers, resulting into heavy run-off, landslides and soil erosion, loss of soil fertility, silting of lakes, rivers and wetlands, reduced land productivity and loss of livelihoods.

The major causes of degradation were reported to be rampant tree cutting for charcoal burning as a source of income, poor farming methods, and overgrazing on the hillsides.

Based on information from the visited districts of Rakai, Sembabule, Nakasongola, Kamuli, Soroti and Kotido, the major ecosystem services highlighted in the drylands were grazing, crop cultivation, seasonal and permanent wetlands, rivers for water supply, woodlands for fuel-wood and building materials.



Plate 4: Causes of tree cover loss: Bags of charcoal awaiting transportation to urban areas (Left) and Manyattas in Karamoja area (Right)

The key environmental and natural resources management issues reported in the drylands were high runoff and water shortage, river silting and floods particularly in Karamoja, land degradation and desertification resulting from overstocking and overgrazing, rampant tree cutting for fuelwood and charcoal, poor farming practices, bush burning, and prolonged droughts.



Plate 5: Signs of desertification in Kotido (Left) and Erosion and Heavy runoff (Right)

Overstocking and overgrazing cause degradation, leading to desertification**iv) Management of Forestry resources**

Forest ecosystems consist of woodlands, riverine forests, lowland tropical and highland forests, plantation and afro-montane/alpine forests. The categories of forests include those in protected areas managed by National Forestry Authority (NFA), Local governments and Uganda Wildlife Authority, forests on public land, communal land, and private land. Community consultations in Masindi district revealed agricultural expansion for growing sugar cane, upland rice and tobacco, fuelwood and charcoal for commercial purposes as the leading causes of deforestation in riverine forest ecosystems on public and private land. Protected forests like Budongo and Rwensama forest reserves were mainly affected by illegal timber harvesting and fuelwood and other NTFPs.



Plate 6: Forest clearing for agricultural: sugarcane, upland rice and tobacco on public land in Masindi : The picture to the right shows Degraded Community Forests, managed under Local Community Forest Associations initiatives by CODECA & Masindi District Local Government with support from WWF

Subsistence crop cultivation, encroachment and timber harvesting were found to be the main causes of forest degradation in Mt. Elgon and Rwenzori Mountains forest ecosystems. Inadequate policy provisions, enforcement, lack of alternative livelihoods perpetuating destructive activities such as charcoal burning and high population growth are some of the root causes of forest degradation.

One of the main issues is deforestation. Deforestation is highest in local forest reserves and private land. For example 33.1% of the local forests have been completely (100%) deforested compared to 6.0% in central forest reserves and 16.8% of the central forest reserves are intact compared to only 1.2% in local forest reserves,(NAPA, 2007). By 2000, it was estimated that the the rate of loss of forest cover was at 55,000 ha per year (FAO 2000, in National Land Use Policy

2007, and National Forest Plan, 2002); The most affected areas included districts of Luwero, Nakasongola, Masindi, Kyenjojo, Mbarara, Rakai, Mpigi, Kibale and Hoima.

v) Climate change and variability issues:

According to the Uganda's National Adaptation Programmes of Action (NAPAs), climate change will increase the frequency and intensity of extreme weather events¹⁰. This will negatively affect the livelihoods of many households, and indeed the economy of Uganda, which heavily depend on agriculture and utilization of resources from the landscape. Research has shown that the situation for developing countries is worsened because they are not well equipped to mitigate various climate and environmental problems (UNFCCC, 2008). Ugandan farmers' ability to respond to climate change and variability is constrained by a number of factors, including but not limited to their ability to apply the traditional coping mechanism. For example, Climate change issues cited in the biodiversity hotspots were vegetation and habitat changes in the protected areas esp. in QENP arising from drought resistant evasive species colonizing the grassland areas. Prolonged droughts, lowered water table and reduced water supply especially in Buliisa district, (6 boreholes had dried in Kilama sub-county in the last 3 years), and reduced fish catch.



Plate 7: Water shortage due to prolonged droughts; domestic water sources shared with livestock in Buliisa District

¹⁰ Uganda National Adaptation Programmes of Action (NAPAs)

Prolonged droughts and changes in rainfall patterns were the most leading effects of climate change and variability issues reported during the consultations. The National Adaptation Programme of Action (NAPA) refers to drought as one of the most prominent effects of climate change. The frequency/length of droughts was reported to have increased in the last five to seven years the 2011/2012 being the longest and severest drought so far experienced. The droughts are said to have caused water shortage and reduced rivers and lake water levels, (water levels in Ajiyova and Enyau rivers in Arua have reduced since 2007¹¹), changes in farming seasons, loss of soil moisture leading to encroachment of wetlands for cultivation (mainly reported in Soroti, Arua, and Nakasongola districts), reduced crop yield and food security. In Isingiro district farmers indicated that in the past they would harvest approximately four (4) bags of 100kg of beans from one acre, but it has since reduced to 2 bags from the same 1 acre of land.

Prolonged heavy rains were reported as one of the major effects of climate change in Bududa. Other significant effects of climate changes were said to be heavy storms and severe flooding in Soroti and Ntoroko districts causing increased water borne diseases such as cholera, and bilharzias. Uganda's ecosystem are very vulnerable to climate change most especially the highlands that are prone to landslides, drylands prone to droughts and desertification and lowlands prone to flooding.

Climate change adaptation initiatives that local people are engaged in include:

- Ploughing with tractor or oxen, which helps to keep and preserve water/moisture in the soil
- Water harvesting and conservation techniques by digging troughs and trenches
- Tree planting, though trees were reported to be mainly planted for commercial, fruits, and building materials.
- Charcoal/firewood conservation stoves

vi) Management of environmental impacts of oil and gas exploration and development in the Albertine Graben:

Since the discovery of commercial quantities of oil and gas in the Albertine Graben, there has been growing concern about environmental impacts of exploration and development. The main

¹¹ Reported in the focus group discussions at Parish level in Arua District

concern is the coincidence of oil and gas with wildlife sensitive areas in biodiversity hotspots. The country has developed a sensitivity Atlas, the environmental monitoring plan for the Albertine Graben, and is currently undertaking a strategic environment Assessment but potential impacts caused by oil and gas drilling activities, in form of water contamination, noise pollution and poor waste disposal are not yet well understood. Cuttings from well drilling are still stored in temporary waste consolidation sites as the composition and character of the waste are still being analyzed so as to guide plans for appropriate disposal options. In addition, an overarching land use plan is required to resolve spatial planning issues at hand including contingent developments such as growing settlements, roads construction and opportunistic economic activities. Other sensitivities include potential pollution of ground and surface water especially the Lake Albert, Albert Nile and associated resources especially fisheries.

vii) Watershed management in vulnerable catchments of Semliki, Manafwa and Lokok rivers

Four (4) key water catchments were covered in the scoping and these are Semliki River Valley in Ntoroko district, Upper Manafwa river system in Bududa district, Lokok in Karamoja region especially Kotido and river Katonga in Sembabule. The rivers are a main source of water supply both for domestic use and livestock particularly in Kotido, Ntoroko and Sembabule as well as crop cultivation in the adjacent wetlands and river valley along the upper Manafwa and river Semliki. Major ENRM issues identified are river bank erosion, river silting due to crop cultivation to the water edge, overgrazing at watering points, flooding due to loss of vegetation and wetlands in the river flood areas, poor farming methods, soil erosion in the watershed areas and change of river course. Soil erosion has also led to siltation of rivers and streams in the lower parts of the catchments and lakes (Plate 8).



Plate 8: River bank erosion along R. Semliki (Left) and Silting along R. Manafwa (Right)



Plate 9: Overgrazing at watering points along R. Semliki (Left) and erosion on R. Lokok (Right)

As a result of poor water and soil conservation practices in the foot hills and adjoining plains abutting the Lake Kyoga and Victoria, the two lakes are becoming shallower due to heavy silt load in the rivers that drain into the two lakes. On the other hand, change of river course in Semliki River Valley has resulted into significant trans-boundary issues between Uganda and DRC involving changes in the international boundary, loss of Uganda territory, loss of property and homes, (currently some people pay to the DRC local authorities to cultivate in their former plots of land that were cut-off).

viii) Landslides and erosion in the Highland Ecosystems

The highland ecosystems considered in this study were Mt. Elgon and Rwenzori Mountains in Bududa and Ntoroko districts respectively. Kigezi highlands were also included in the focus areas for the scoping. The key ecosystem services and resource use in the highlands are agriculture, watershed, (Mt. Elgon Forests, Rwenzori Mountains Forest, Echuya and Bwindi forests etc.), streams and rivers for water supply,



Plate 10: A landslide in Bududa

trees and other forest products. The highland ecosystems are densely populated, (300 persons per km² in Kabale and comparable levels in Bududa (Uganda Housing and National Census, 2002), and intensively cultivated creating intense pressure on the land resources.

During consultations, the communities estimated an average landholding in Bududa to be at one (1) acre for an average household of 9 people, which is over and above the national average of 6 people¹². The intense pressures on land resources has resulted into soil erosion, landslides, loss of soil fertility, deforestation, land fragmentation, land shortage, severe river flooding and silting. The major drivers of land and environmental degradation in the highland ecosystems were reported to be mainly loss of tree and vegetation cover, forest encroachment and degradation, intensive cultivation coupled with poor farming practices on the steep slopes, and over population.

ix) Wetlands management

The major wetlands systems include Lake Victoria wetlands, Lake Kyoga wetlands, Kigezi highland wetlands, Kafu basin wetlands and river Nile wetland system among others. The Lake Kyoga Opetabisina- Awoja wetland and Lake Victoria Wetlands were included in the focus areas for the scoping study and consultations conducted on the Lake Kyoga-Awoja wetland in Soroti district. Wetland degradation is a serious environmental challenge in Soroti District resulting from rice and vegetable growing, other crop cultivation and grazing. In addition, burning, flooding and silting caused by poor farming methods in the uplands, and soil erosion have also led to significant wetland degradation. The impact has been wetland vegetation changes, reduced sedge, and loss of biodiversity e.g. the crowned crane that was common in the wetlands is now rare¹³. Community regulations for use of permanent wetlands and the grazing areas stipulate free access and user rights for all community members. But individual farmers in the south-west have obtained either legal title deeds or exclusive rights from their community to reclaimed wetlands. In many of the seasonal wetland valley bottoms in the east, families, generations ago, obtained exclusive rights from the community or clan. However, exclusivity only started to be asserted when rice cultivation increased the value of the land significantly. In the process, the original 'owners' turned 'their' valley bottoms into rice fields or leased them to rice cultivators. Farmers and pastoralists with no user rights to valley bottoms then lost their access to seasonal grazing areas. This has led to tension and conflict between rice cultivators and cattle grazers.

Urbanization, wetland reclamation for floriculture, industrial construction and fish landing site activities are major threats to wetlands around Lake Victoria. Wetland degradation around Lake Victoria has

¹² As reported during community consultations at sub-county level in Bududa District, 30th April 2012

¹³ Reported by a respondent at the district consultations

resulted in severe flooding in Kampala city and other surrounding urban areas, pollution from direct flow of urban waste and industrial discharge into the lake, which has threatened various fish breeding sites.

x) Gender Dimensions in ENRM and Climate Change

Natural resources degradation and climate change affect women, men and the youth differently. The depletion of natural resources means that women have to spend long hours searching for fuel-wood and water in order to provide for their families.¹⁴ During floods, water and sanitation related diseases are rampant and women spend more time attending to the sick family members. In Ntoroko district, it was reported that flooding in the Semliki River valley caused outbreaks of cholera, worms and other water borne diseases. The long hours of searching for firewood and water and time spent tending to the sick family members deprives women of time to engage in other productive economic activities like farming and income generating projects.

The women consulted in the study reported firewood and water as the major issue that affects their day to day livelihoods as result of loss of tree cover and prolonged droughts. This was echoed in almost all the districts where consultations were held. It was indicated in the focus group discussion in Rubirizi district that although, there was a MoU between Queen Elizabeth National Park and the adjacent community in Kicwamba Sub-county, to carry out beekeeping at the edge of the park, there was no arrangement that allows women to sustainably collect firewood from the park. In addition to scarcity of firewood, the gravity water scheme that was established by government in Kichwamba sub-county broke down. Thus, the women had been forced to fetch water and collect fire wood illegally from the park, often getting arrested by the park rangers.

In the majority of the districts where consultations were held, women emphasized support for setting up energy saving stoves and water harvesting tanks to help address fuel-wood and water scarcity. Improved ENRM and adaptive climate change initiatives therefore provide potential for development of community based enterprises that create employment opportunities for the women and youth ultimately enhancing their livelihoods and well being.

¹⁴ Strengthening Sustainable and Natural Resources Management, Climate Change Adaptation and Mitigation in Uganda, Project document, UNDP

xi) Equitable gender roles and responsibilities

There are distinct roles women, men, youth and elders are playing in land management and climate adaptation. In pastoralist areas such as Karamoja, the youth (Karacuna) engage in livestock grazing. The women tend to gardens and care for the calves and a few animals within the homesteads, while the elders are responsible for decision making on general land allocation and use. There is considerable participation of women in SLM projects as the majority of the CBOS that were visited comprised mainly of women and in a few, women were leaders of the groups. Some of the women CBOs that the study team consulted include:

- Tusaliza Kisalizi Women Farmers Group in Nakasongola district involved in the UNDP SLM initiative. The group is piloting application of soil and moisture conservation techniques through mulching and improved drought resistant seed varieties. The study team was not able to see any crops growing under the new farming techniques as the land had just been prepared waiting for the rains to start so they could plant.
- Aliomuke Women Farmers Association in Vurra Sub-county Arua District involved in tree nursery management and tree planting since 2002. The association supplies tree seedlings throughout the district and the women are also involved in agroforestry; planting fruit trees and hedge rows on their farms. The group is also involved in protection and management of access to community forests in their Parish which have drastically reduced due to unsustainable tree cutting. The traditional system based on the elder's authority that protected the communal forests broke down. The women group has established a committee to replace the traditional system, which has put in place regulations for access to the communal forests, and overseeing use of trees in the forests. The intervention has helped the women to secure their access to tree resources.
- In Rubirizi District women were involved in beekeeping at the edge of Queen Elizabeth National Park. This is an income generating activity and a problem animal control mechanism, mainly for elephants. One group of 29 women members was reported to be active in the initiative.

Women face a lot of challenges as they get involved in sustainable environment and natural resources management initiatives ranging from access to land and capital, land ownership to rights to trees

resource (Gender and Natural Resources Management¹⁵). The women consulted indicated that they were facing a number of challenges; the Aliomuke Women Farmers indicated that they could not establish woodlots as women do not own land and have restricted access to land resources. They also lacked seedlings for the most desired trees like grevillea identified as a drought resistant and agroforestry species. Tusaliza Women Farmers Group women expressed concerns about the new soil and water conservation farming methods such as the initial setting of planting holes and preparation of the land is laborious, mulching materials are scarce, and seeds are expensive. The beekeeping women group members reported a number of challenges that they were facing specifically as women which include:

- High maintenance costs of the hives as the women cannot do it themselves; they depend on hired labour compared to the men who maintain the hives themselves.
- Harvesting is mostly done at night (when it is cool), and women cannot leave their homes at night as it may lead to domestic problems.
- Establishing the bee colony also requires expertise which women do not have.

Thus ENRM and climate change initiatives that are to be supported should not be those that could be hindered by women's access to land and land ownership and rights to other production resources. At District and national level, consultation by questionnaire showed that there is almost equal participation of women (46%) and men (52%) in administration and management positions (Figure 3).

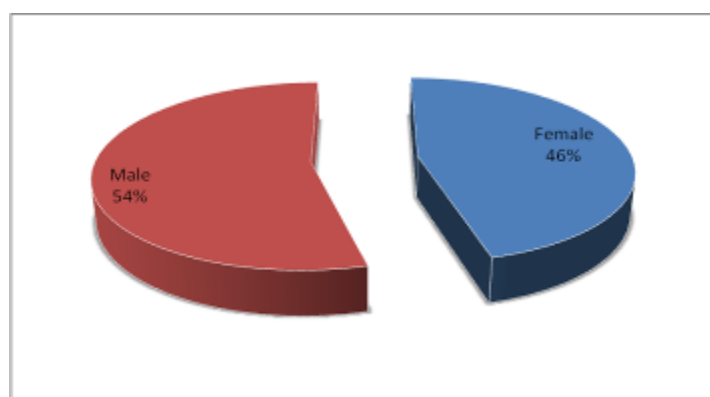


Figure 3: Gender of respondents to the questionnaire survey

¹⁵ Links training manual:www.fao.org/sd/LINKS/resources/resources.html.

3.2 ONGOING AND PLANNED LAND MANAGEMENT INITIATIVES

The Government of Uganda and partners recognize the importance of SS-ENRM, and have put management provisions in a number of action plans aimed at strengthening the institutional framework of the environment and natural resources sector. The relevant action plans include among others: the Land Sector Strategic Plan; the National Development Plan; National Biodiversity Strategy and Action Plan (NBSAP); the Wetland Sector Strategic Plan; National Forestry Plan; the MAAIF Agriculture Sector Development Strategy and Investment Plan:2010/11-2014/15; and WWF Uganda Country Office (UCO) Energy and Climate Strategy 2012 – 2016.

The Government of Uganda (GoU) and the United Nations Development Programme (UNDP) agreed on a Country Programme Action Plan (CPAP) 2011 to 2014 to guide the development and delivery of projects that respond to the National Development Plan 2010/11 – 2014/15 and other national action plans for ENRM. Central to these plans are the focus in the areas of sustainable environment management, sustainable land management (SLM), natural resource management, climate change adaptation and mitigation. A number of initiatives and synergies are being implemented by government agencies and development partners. A map of ongoing ENRM initiatives that were identified is presented in Figure 5. The initiative include among others:

- Uganda Wildlife Authority (UWA) and National Forestry Authority (NFA) are carrying out forest restoration under Collaborative Forest Management (CFM);
- World Bank supporting a number of Clean Development Mechanism Project;
- IUCN supporting MERECP, a regional trans-boundary conservation and sustainable development project on Mt. Elgon ecosystem;
- IUCN and ACF Project on Building drought resilience in the Karamoja region through IWRM, with funding from ECHO – The European Commission on Humanitarian Aid;
- IUCN-UNDP COBWEB project on Extending Wetland Protected Areas through community conservation initiatives (COBWEB) adjacent to L. Mburo PA (Isingiro, Rakai districts) and the Pian-Upe PA (Katakwi and Ngora districts) – Involves soil and water conservation for catchment management, lake buffer and wetland boundary demarcation and re-vegetation and restoration of catchments of L. Nakivale and Kacheera in Isingiro and Rakai respectively; and promoting eco-tourism as a catalyst for biodiversity conservation in the L. Bisina-Opeteta wetland complex adjacent to the Pian-Upe in Katakwi and Ngora districts;

- The IUCN Project on Building drought resilience in the Upper Aswa sub-catchment, with funding from the Austrian Development Corporation (ADC);
- UNDP in conjunction with World Bank through MAAIF, supporting Sustainable Land Management (SLM) with a linkage to climate change (MAAIF, 2011); The project to mainstream Sustainable Land Management (SLM) activities in the six cattle corridor districts of Uganda was developed to contribute to the UNDP Country Program Action Plan (CPAP) outcome “Enterprises and communities, particularly women, are able to access alternative energy, adapt to climate change and sustainably use natural resources for productive purposes”. The main project objectives are: to support mainstreaming of SLM issues into District Development Plans (DDPs) and budgets, to support adoption of sustainable livelihood and land management practices by local communities in the cattle corridor districts, and to strengthen the United Nations Convention to Combat Desertification (UNCCD) and National Action Plan (NAP) Focal Point Office in the Ministry of Agriculture animal Industry and Fisheries (MAAIF) in implementation of the National SLM Investment Framework;
- Promotion of biogas energy by supporting on-farm enterprise mixing: zero grazing livestock mixing with crop husbandry targeting biogas energy, food security based on increased yield by manure application and income mainly promoted by NGOs (Send a Cow, Heifer International, SNV), churches, private individuals, Government (mainly NAADS), UNDP and Development Partners, such as IUCN and ICRAF. The initiatives include pilot demonstrations and capacity building (WWF, 2011). The Renewable Energy Policy (MEMD, 2007) estimated over 500 biogas plants established in the country and over 250,000 zero grazing farming households that could potentially adopt the technology;
- WWF supporting UWA in biodiversity conservation in the Rwenzori Mountain National Park;
- WWF in collaboration with MWE is also engaged in integrated watershed management in the River Semliki Basin;
- WWF Conservation of Biodiversity in the Albertine Rift Forests of Uganda project supported by UNDP-GEF and executed in partnership with MWE and others including NFA, Wildlife Conservation Society (WCS), CSOs, NGOs, CBOs and District Forest Services. The project has been aiming at implementing innovative conservation activities in the Northern Albertine Forests of Uganda. The project focus has been on developing a Strategic Plan for the northern Albertine Rift under the Regional Framework, including a coherent M&E strategy. Activities to be carried out include support to collaborative forest management, NFA capacity strengthening

for improved management of Central Forest Reserves, strengthening and maintenance of linkages between these protected areas through incentives for forest conservation on private land, and promotion of incentives for alternative resource use strategies and conservation on private lands;

- The Territorial Approach to Climate Change (TACC) project for the Mbale region of Uganda is being implemented by UNDP and benefits from financial support provided by the Danish Embassy, DFID and UNDP, as well as from technical and development support provided by the Welsh Assembly Government;
- The EAC's Protocol on Environment and Natural Resources in Chapter 3 has a number of articles with provisions for management of trans-boundary resources. EAC with funding from EU and through LVFO aims to harmonize, develop and adopt conservation and management measures for the sustainable utilization of living resources of Lake Victoria to optimize socio-economic benefits from the basin for the three Partner States;
- Nile Basin Initiative (NBI) is running various projects, for example, the Water Resources Planning and Management Project (WRPMP). Together with NEMA and with support from EU, the NBI has also supported the restoration of the Semliki river banks through community management zoning of the Semliki River banks (Figure 4). The Semliki zoning plan includes a stretch of 10 meters abutting the river that is left with no activity for natural wetland regeneration and support aquatic animals. The next zone measuring 30 meters is the tree planting zone. Grazing and cultivation are not allowed in this zone. This is followed by another tree zone (30 meters) where the trees planted are a mixture of fruit trees and agro-forestry trees (leuciana, calliandra and grevillea) for livestock and firewood. The next 30 meters is used for cultivation, followed by settlements and multiple activities;
- The Wetlands Management Department has recently launched a ***“National Wetland Demarcation Exercise for Uganda”***. The main objective of the demarcation exercise is to clearly delineate and physically mark the boundaries of the wetlands and gazette those that perform critical and vital functions. In addition a framework plan stipulating the ecological, socio-economic and institutional management interventions is planned. This will help to identify what can be done within and adjacent to the wetland. In addition, it will outline mitigation measures where environment needs supersede the concerned development or activity. The department is also working with the department of Fisheries resources to identify fish breeding hotspots mainly along fish landing sites; and

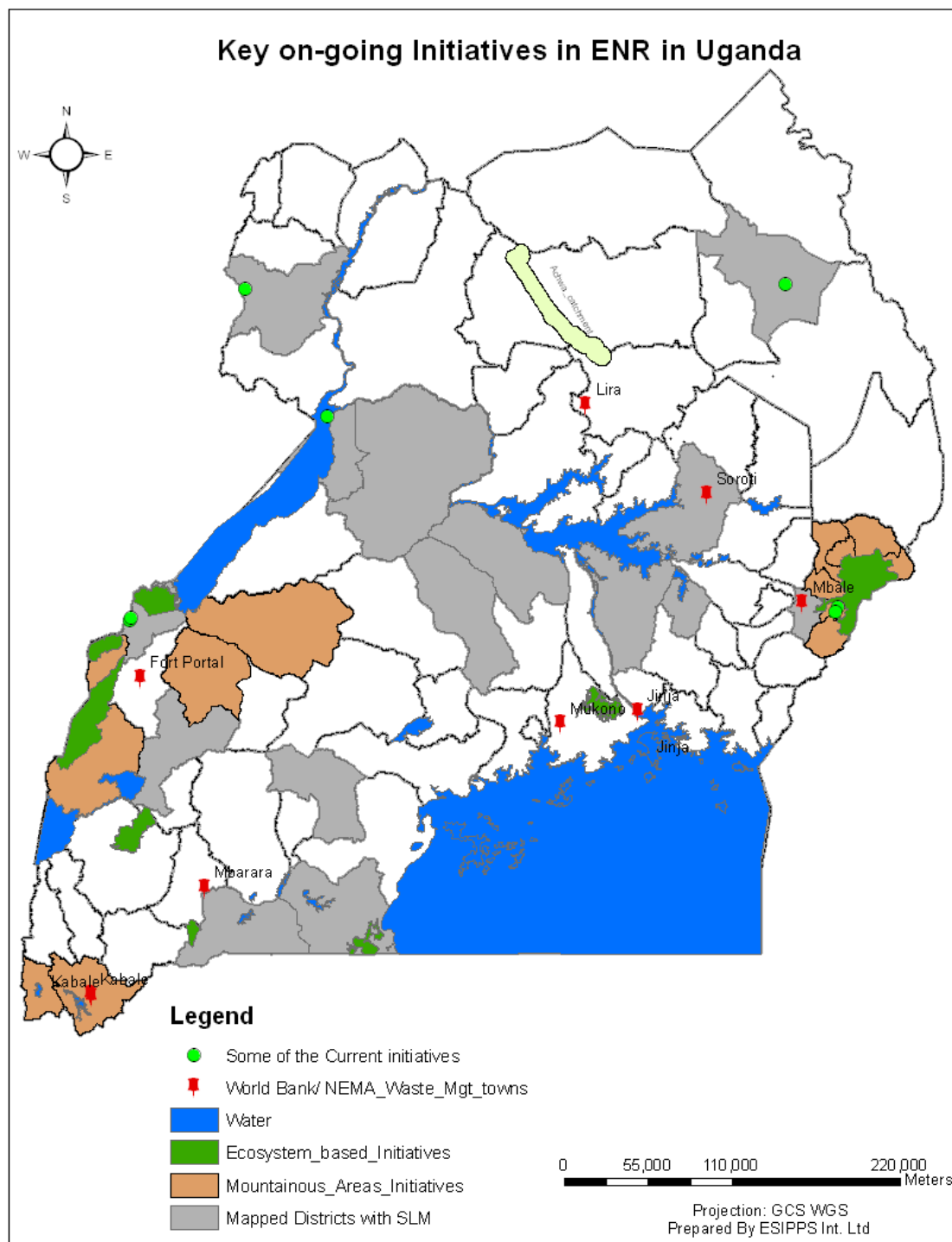


Figure 5: Map of on-going ENRM initiatives identified



Plate 11: Communities piloting Collaborative Management Agreements with QENP on problem animals by bee keeping at the park boundary



Plate 12: Fencing to control erosion and flooding on Semliki River

Furthermore, the Government of Uganda has put in place an enabling policy and legal framework, plans and programmes. Laws, policies, plans and other frameworks relevant to ENRM are presented in Annex III.

3.3 GAPS FOR PROJECT INTERVENTIONS

The gaps were identified as barriers and capacity gaps to up-scaling ongoing ENRM initiatives and or starting new ones.

3.3.1 Barriers to scaling up of ENRM interventions

The current interventions in ENRM are evidence that Uganda has potential to advance in natural resources management. However, there is limited scaling up of ENRM project activities. From questionnaire consultations, 95% of the questionnaire respondents agreed that they face a lot of challenges in scaling up ENRM/SLM interventions. The major barriers to scaling up ENRM/SLM interventions from the questionnaire are presented in the Figure 6-Left. The barriers include:

- i. Inadequate funding;
- ii. Limited trained manpower and lack of field equipments;
- iii. Limited awareness , sensitization and participation in ENRM;
- iv. Poor approach for law enforcement;
- v. Political interference;
- vi. Poor accessibility and inadequate transport facilities;
- vii. Poor management of trans-boundary natural resources;
- viii. High cost of agro-forestry in-puts;
- ix. High population densities leading to land shortage and land fragmentation; and
- x. Negative attitude among communities.

From literature, other barriers to scaling up of sustainable ENRM include:

- i. Limited capacity of local governments to carryout ENRM initiatives;
- ii. Institutional capacity of CSOs, NGOs, SMEs and Government Agencies to mainstream climate change challenges in ENRM;
- iii. Lack of or limited incentives to scaling up initiatives of ENRM;
- iv. Vulnerable communities;
- v. Limitations in identifying, develop and implement appropriate sustainable ENRM initiatives;

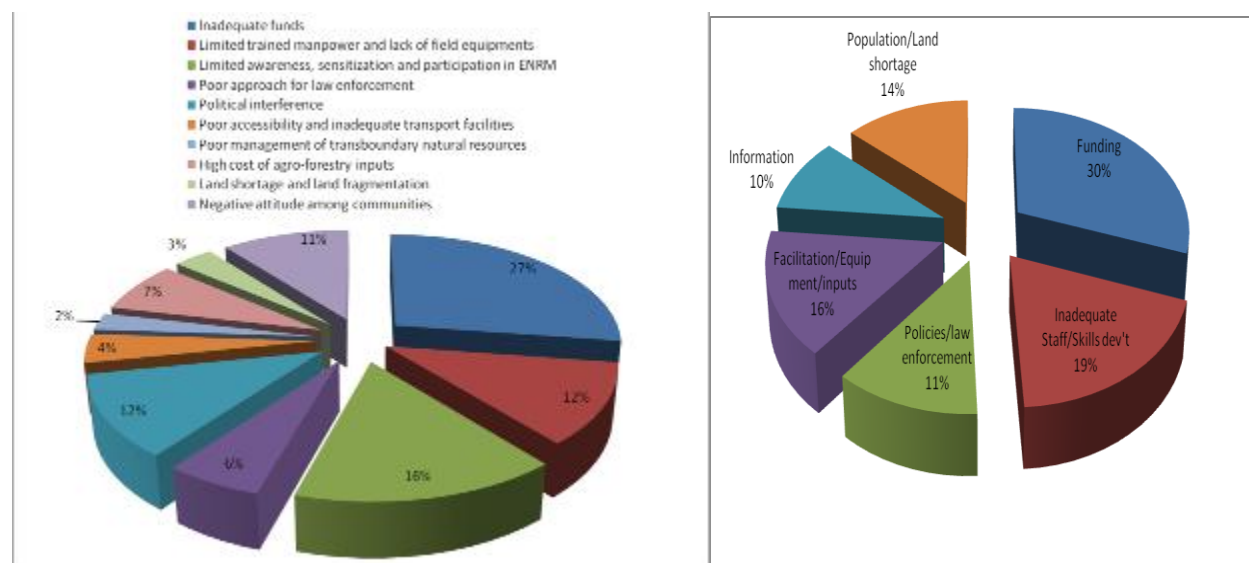


Figure 6: Barriers (Left) and capacity gaps (Right) to scaling up ENRM initiatives based on questionnaire survey

3.3.2 Capacity Gaps in SLM and Biodiversity Conservation

Capacity gaps for scaling up SLM practices and enhancing biodiversity conservation and restoration of degraded ecosystems were identified at the various levels; District and sub-county local governments, CBOs, and local communities.

b) The capacity gaps at district and sub-county levels

Capacity gaps at district and sub-county level as identified through the questionnaire interviews are shown in Figure 6-Right. They include but are not limited to:

- i. **Limited funding.** Limited funding was identified as a major capacity gap at the district and sub-county levels. Thirty percent (30%) of the respondents indicated that there was limited financing of the ENRM sector, thus limiting the capacity for the districts and sub-counties to promote SLM and biodiversity conservation initiatives. For example, Bwelamule Sub-county in Ntoroko District indicated that the sub-county has a 5 year Environmental Management and Development plan (2010-2013) but lack funds to implement it. Priority actions identified in the plan include; formation of water use groups and sensitizing/training them about sustainable water resources and NR management.

- ii. **Inadequate staffing in the ENRM departments and skilled staff** was another critical capacity gap identified at the district and sub-county levels, (Figure 6-Right, 19% of respondents). Lack of enough staffing and relevant skills was said to limit the capacity to transfer appropriate SLM techniques and technologies to the farmers as well as scaling out to new areas and within the same ecosystems.
- iii. **Transport facilitation and logistics hampers mobility of extension workers and district staff** to the field to train and sensitize farmers. Inability to provide technical services to farmers is aggravated by lack of field equipment and inputs.
- iv. **Lack of byelaws coupled with poor policy and law enforcement by the districts.** This is exacerbated by political interference in policy implementation and law enforcement.
- v. **Lack of information and knowledge about SLM techniques and Community Based Natural Resources Management and biodiversity conservation approaches.**
- vi. **Lack of adaptive land use planning** and its incorporation into district ENR sector plans.
- vii. **Environment committees that are important in implementation and management of the ENRM and biodiversity conservation interventions are lacking in some districts.** The committees need to be instituted as statutory requirement. In the districts where they have been formed, they are not functional. For example in Kotido District the study team was informed that the environment committees though in place they lack training, awareness about their roles, information & knowledge about ENRM issues and are not facilitated to perform their functions.

b) Capacity gaps amongst CBOS and community groups

Although a number of CBOs and community groups were found to be engaged in a various SLM and biodiversity conservation initiatives there are critical capacity gaps limiting effective implementation of activities among the CBOs and the local communities. The critical capacity gaps that were identified at this level include:

i) Land shortage. Based on the questionnaire interviews, high population growth leading to land fragmentation and land shortage was mentioned as a key factor limiting uptake of SLM techniques (14% of the respondents) especially agroforestry and tree planting (Figure 6-Right). Land shortage as a critical gap in SLM was also echoed in the focus group discussions particularly in Bududa, Masindi and Isingiro Districts.

ii) **Lack of inputs and equipment** were identified as capacity gaps for CBOs and communities as indicated by 16% of the questionnaire respondents (Figure 6-Right) and as also revealed in the community consultations. During the focus group consultations, CBOs indicated that key inputs and equipments that they lack in SLM initiatives include fertilizers, good quality seedlings, mulching materials, agro-forestry and tree nursery inputs, equipments and tools for trench and terrace making.

iii) **Skills and knowledge gaps in SLM techniques and land restoration.** CBOs and local communities were found lacking skills and knowledge in digging the appropriate pits/planting holes, raising better quality and drought resistant seeds, tree grafting techniques, tree nursery and tree planting management, terracing and trench making and maintenance.

iv) **Financing and access to credit/soft loans facilities to purchase inputs, materials and equipment** mentioned in (ii) above. In the focus group discussions farmers noted that NAADS and other programmes such as UNDP/IUCN/TACC had introduced improved farming techniques and farm enterprises development, however the farmers lacked access to finance to sustain the initiatives. The assumption is that the initial support with inputs and seed stock is supposed to generate revenue and incomes for the farmers as well as sustaining production, but this is not the case.

v) **Lack of skills in management systems** like records keeping and management, financial management to be able to monitor their activities, impacts and efficiency. This was reported in the supported water user groups under WWF River Semliki Integrated Water Catchment Project, Masindi Community Forest Associations and others. The groups also lack facilities such as office or point of contact where to conduct their work.

vi) **Limited support for services such as processing, handling and marketing of products:** This includes market information, post harvest support and facilities, processing and handling, etc,. The farmer groups and CBOs indicated lack of knowledge in marketing and value chains, which, coupled with lack of support services discourages them from taking up and sustaining new farm enterprises and other ENRM initiatives. For example Ahankungu Bee keeping Association at the edge of QENP reported that lack of better harvesting, handling and processing facilities was a key limitation to producing quality honey, while lack of quality standard packaging materials was affecting the market potential for their products. In some NRM sectors where handling facilities have been supported there are management and maintenance challenges affecting their utilization. For example under the Icelandic/UNDP support to MAAIF to establish fish handling facilities at landing sites in the country, one such facility was constructed at Wanseko Fish landing site in Buliisa district. The study

team was informed that although the facility was completed it was not yet in use because the management committee and user groups had not yet been trained on how to use the facility, as well as putting in place management and maintenance protocols.



Plate 13: Completed fish handling facility at Wanseko not yet utilized (Left) and BMU/Community in a focus group discussion at the facility.

3.4 PROJECT INTERVENTIONS IN PRIORITY GEOGRAPHICAL AREAS & SITES

3.4.1 Introduction

This section presents suggested project interventions in priority sites and geographic areas. The interventions are based on literature review and combining the natural resource and socio-economic maps in a GIS environment (these were used for identifying sampling districts of focus for stakeholder consultations at local community, District and national level). The interventions are also based on information obtained from stakeholder consultations. The sections below summarize the criteria used, followed by the identified interventions and sites.

3.4.2 Criteria for selection of priority geographical areas and sites

The criteria for identification of the interventions and sites are summarized as follows:

- Preliminary selection of areas for consultations using map-based criteria in a GIS, which involved combining biodiversity hotspots, environmental hotspots mainly the cattle corridor, rivers, lakes, wetlands and highland ecosystems and social economic data such as poverty and population density (Section 2.4.2; and Annex II).
- Information from literature on current initiatives and barriers
- Areas where current initiatives require extension in time and/or up-scaling to new areas in the same ecosystem
- Areas where there are plans and strategies in place or where best practices have been identified for scaling out in the areas of need were considered as model sites
- Areas where there are critical issues but no previous intervention
- Areas and sites recommended by Environment officers /offices of contact at the selected Districts during the stakeholder consultations
- Outputs of focus group discussions with communities and CBOs (Annex V)
- Questionnaire interviews and meetings (Annex IV): The interventions and areas identified based on the above processes were confirmed by allowing respondents to prioritize them during the questionnaire interviews. All respondents (100%) agreed that the environment and natural resources are being degraded. However, the respondents ranked differently the environmental hotspots that require immediate attention. This could have been partly influenced by the prevailing ENR challenges affecting the specific district/region where the interviews were

conducted. There are, however, some ENRM issues that were consistently selected in most areas where interviews were conducted. Figure 7 shows the percentage preference of the proposed priority interventions for environment and natural resource management in Uganda.

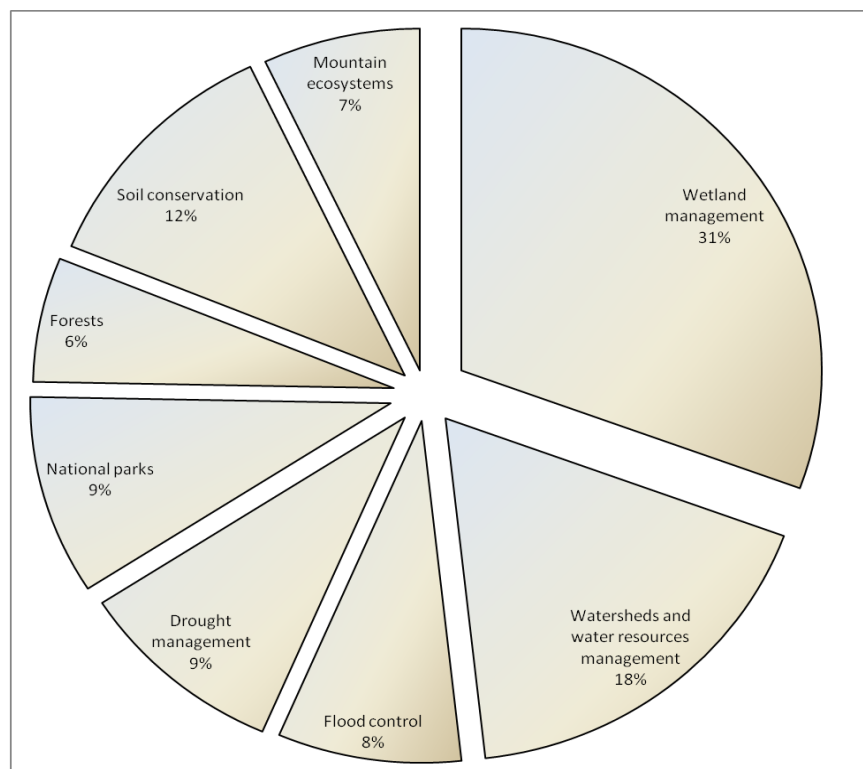


Figure 7: Priority ENRM areas of focus for Biodiversity and SLM in Uganda based on questionnaire survey

Based on the above criteria, the following key SS-ENRM interventions were identified under the two project outputs at ecosystem level as follows:

Output 1: Mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated

Result 1.1 Community forestry and private woodlots in Albertine Forests enhanced

Result 1.2 Biodiversity conservation and social economic livelihoods in PA-edge communities strengthened

Result 1.3 Environmental monitoring and regulation of oil and gas activities in the Albertine Graben strengthened

Output 2: Successful Sustainable land management (SLM) identified and replicated

Result 2.1: Integrated water catchment (watershed) management and SLM promoted

Result 2.2: SLM technologies: Soil/water conservation and agro-forestry up-scaled

Under each result area, project packages are elaborated in terms of project name, rationale and specific interventions in geographical areas and site(s). The map in Figure 8 shows the proposed project sites.

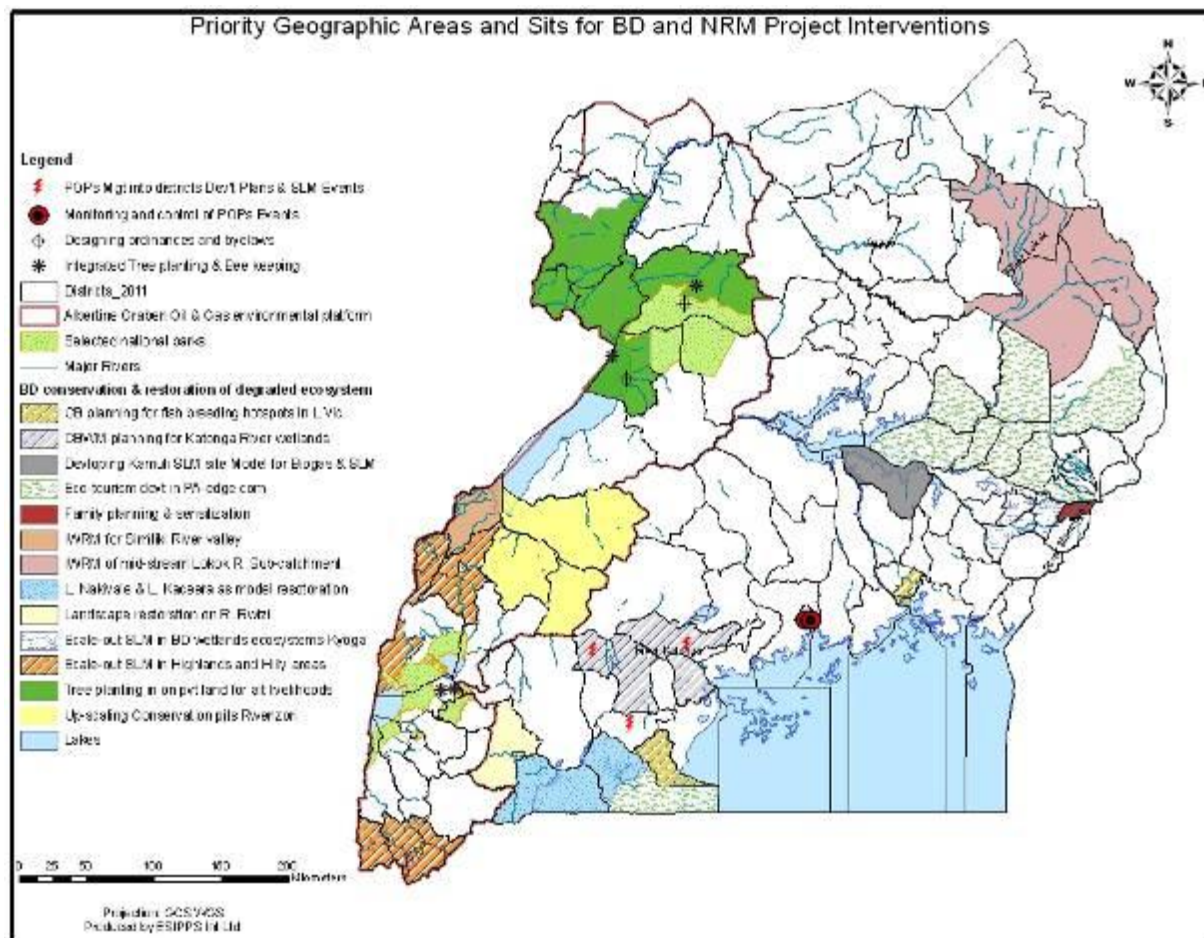


Figure 8: Map of priority geographical areas and sites for biodiversity and SLM project intervention

Output 1: Mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated

3.4.3 Result 1.1 Community forestry and private woodlots in Albertine Forests enhanced

3.4.3.1 Capacity development support for community forestry on public and private forest enclaves outside protected forest reserves

Rationale:

Deforestation is rampant outside protected areas on public and private forests (section 3.1(iv)), mainly due to agricultural expansion and charcoal burning. The WWF Forestry and Biodiversity Conservation project covering the districts of Kyenjojo, Kibale, Hoima and Masindi supported conservation of community forests and forests on private land. For example formulation of ordinances for establishment and management of Community Forests and Community Forestry Land Associations for four forests in Masindi District has been supported under the project.

- Despite the community forests management initiatives under the WWF project in Masindi and other Albertine rift districts, forest clearing is increasing;
- This UNDP project will build on the current community forestry efforts in Masindi District around the Budongo forest edge patches, particularly to strengthen community forestry associations and catalyze incentives for planting trees on private land by integrating ecosystem services initiatives. This will require that the communities are sensitized about ecosystem services concept and trained on their implementation.

Project interventions:

- Upscale community forest project in Masindi - Budongo forest edge currently undertaken in the community forest sites of Motokayi, Terenge, Ongo, Kanyege, and Ewafara in Budongo Sub-county. The community forests are to be developed as models and demonstration sites for other communities in the forest corridors or patches in the Albertine rift.
- Extending the WWF Management of Forestry Resources outside protected areas in Kyenjojo and Kibale districts by:

- Strengthening the community forest management committees in Motokayi, Terenge, Ongo, Kanyege, and Ewafara in Budongo Sub-county: Create meeting forums and train the committees in record keeping, monitoring and evaluation
- Support implementation of the community forest management plans e.g., enrichment planting, woodlot establishment sustainable harvesting;
- Support non- forest destructive enterprises such as bee keeping in and around the community forests;
- Support agro-forestry to provide tree resources and soil/water conservation
- Support planting of trees in non-farm/woodlot sites such as village paths/access roads to increase tree cover and conservation

3.4.4.2 Promoting tree planting on private land in the Albertine Graben; integrating ecosystem services and ecotourism

Rationale:

The expansion of gas and oil activities in the Albertine Graben requires urgent attention on supply of firewood, charcoal and construction poles amidst increasing opportunistic activities around oil and gas exploration sites that will attract more people settling in the area. In addition, land use decisions on infrastructure versus land allocation to nature conservation will be a challenge, thus requiring incentives for tree planting initiatives through ecosystems services and popularizing REDD program. Further to wood products, the forests offer opportunities for recreation and get-away experiences for the increasing workforce in the area and beyond.

The project sites will include the Albertine districts of Arua, Nebbi, Nwoya, Buliisa, Ntoroko, etc., where the needs are likely to escalate as onsite and contingent activities pertaining to oil and gas increase in a biodiversity hotspot area.

Project Interventions:

- Sensitization and training of relevant Local District staff and communities in ecosystem and ecotourism concepts oriented to forestry

- Preparation and implementation of an **integrated ecosystems/ecotourism plan**. Based on the plan, sub-counties of focus in each of the selected districts will be identified. The integrated ecosystems/ecotourism plan will be oriented to forestry and will include the following elements:
 - i. Capacity building of District Local Government and Communities in managing and monitoring integrated ecosystems/ecotourism projects or enterprises.
 - ii. Support for forest management and/ or tree planting on private land by sensitization and capital investments in terms of cost-sharing on seedlings and labor, emulating the FIEFOC projects. However, communities expressed reservations about FIEFOC approach of providing free seedlings as a limiting factor in scaling up initiatives of private/community nurseries business enterprises. This is because the communities that receive free seedlings keep waiting for more free supplies, and the future potential recipients do not find reason to buy from the current projects since they expect the project to extend to their areas. Therefore, evaluation of the FIEFOC approach will be required prior to adoption.
 - iii. Farmers to be encouraged to set aside a certain percentage of their land for tree planting. This will be incorporated in ENRM byelaws and/or ordinances for enforcement.
 - iv. Promote incentives for tree conservation practices on private land/existing farmland for example compensation to farmers who conserve forests on the land for ecosystems services through the REDD programme.
 - v. Assessment and selection of appropriate tree species that meet people's needs. The communities/beneficiaries should be involved in the species selection.
 - vi. Application of cost sharing options rather than supplying free seedlings. This will encourage communities to invest and realize ownership of initiatives instead of waiting for project interventions.
 - vii. Invest in pilot sites to demonstrate the value chain benefits of tree conservation for example conservation and sell of Shea butter tree for use in cosmetics.

3.4.4 Result 1.2 Biodiversity Conservation and social economic livelihoods in PA-edge communities strengthened

3.4.4.1 Integrated biodiversity conservation and community livelihoods in PA-edge areas

Rationale:

Conflicts between communities and PAs management have for long revolved around boundary issues such as: Boundaries not being clear and/or marked; communities' access to PA resources such as firewood, poles and thatching grass, problem animals and incompatible land use to wildlife conservation in the PA-edge communities. To minimize these conflicts and enhance the participation of communities in biodiversity conservation, the projects indicated below have been identified.

1) Integrated tree planting and problem animal control and management by bee keeping in the following areas:

- i. **Nwoya around Kochgoma and Kololo areas along Murchison Falls National Park boundary:** tree planting and beehive establishment for problem animal control following the Rubirizi initiative, in addition to management of existing elephant trenches.
- ii. **Buliisa : crocodiles and hippos were a major issue at Wanseko and Mubako areas.** To establish crocodile fences to minimize crocodile attacks.
- iii. **Kasese District in Karusandara Sub-county:** tree planting and bee hive establishment
- iv. **Rubirizi District: Up-scaling existing initiatives in Kicwamba Sub-county** by Ahankungu Bee Keeper's Association. Capacity issues and needs identified by the beekeeping CBO included; acquisition of modern beehives to increase production, improved harvesting, handling and processing techniques, facilities for better quality honey, credit facilities and finance to invest in better facilities, improved packaging and marketing, exposure and training to learn about better techniques in processing, packaging, marketing and management of the initiative.

2) Eco-tourism development in PA –edge community land areas for improved livelihoods

Based on ecotourism, the project will address improved livelihoods for PA-edge communities as a measure to reduce dependency on the PAs for natural resources and to empower communities engage more in conservation. The sites for consideration include:

Kochgoma Sub-county, Nwoya District to the north of Murchison Falls National Park: **A site around QENP in Rubirizi District- Kashoha-Kitomi Forest Reserve:** Build on the lessons learned and progress made under the PEMA II WWF Nature Uganda project that was promoting participatory environmental management of Kashoha-Kitomi Forest Reserve through Collaborative Forest Management (CFM) and eco-tourism initiatives (WWF PEMA II Project Evaluation, 2011). The project will support the Butooha Tukwakatinise Environmental Association eco-tourism enterprise that offers tourism activities on Lake Butooha (a crater lake bordering the forest reserve) and forest walks.

Sango bay Forest edges - in Rakai District based on Sango Bay Forest trails and backcloth industry/ganda culture based on ficus trees. The district has a lot of potential of nature based and cultural tourism due to a number of potential attractions present in the district; unique swamp forest ecosystem, Important Bird Area (IBA), (the area has 75% of global population of the blue swallow, it is the only known breeding ground of the migrant Grey-headed Gulls in Africa, 250 bird species have been recorded in the Sango Bay area), has a number of historical and cultural sites including the Rwanda Genocide Memoriam. The district has already drafted a concept for tourism development and is planning to develop a District Tourism Development Plan, carry out an inventory of the tourism potential sites and document them, train tourism community guides and add Rakai district to the national tourism circuit. The Sango Bay area provides ample connectivity to Lake Mburo National Park as a tourism circuit. (Rakai District Tourism Development Concept, undated). A district development committee of nine members is in place to steer tourism development in the district.

Eco-tourism development in L. Bisina - L. Opeta Ramsar wetlands in NE of Uganda: The project will involve up-scaling of ecotourism development initiatives building on the concluding COBWEB project in the same site. The project has developed an initiative on ecotourism as a catalyst for biodiversity conservation adjacent to the Pian-Upe wildlife reserve. Biodiversity and tourism information centers have been constructed, local governance structures in place, boat riding, sport fishing, Ngero rock painting, Teso cultural and bird watching (these are IBAs) packages are being developed. The project will focus on implementing further potential tourism options already identified as follows:

- Linking the site to Mt. Elgon and Kidepo tourist circuits. Discussions are on-going with UWA.

- Developing sport hunting in the wetlands complex and implementing the management plan that is being developed for the Pian-Upe Wildlife Reserve that incorporates management of the wetlands complex

3.4.4.2 Family Planning and Sensitization for better management of land resources and conservation in PA Edge Communities of Mt. Elgon in Bududa

Rationale:

The highland areas of Mt. Elgon in Uganda, especially the western and south western parts of the mountain, have some of the highest population densities in the country. The region has a high population density of 1,000 people per square kilometer and a population growth rate of 3.4 percent per annum¹⁶. The 2002 census (Uganda Bureau of Statistics, 2004) shows an average population density of 952 persons km² for Manjiya County in Bududa District, rising up to more than 1,300 persons km² in other parts of the district. The high and rapidly increasing density (with a 5.6% annual growth since 1991) implies that land scarcity is a significant problem in this area where subsistence agriculture is the main land use. Land parcels are small (approximately 35 m²)¹⁷. During the scoping, land scarcity was found to be a critical issue in Bududa District (section 3.1 (ix)).

High population density in the Mt Elgon region puts a lot of pressure on the area's eco-systems to supply food, fuel-wood, water and land for cultivation. The area is also extremely vulnerable to climate change, with severe landslides leading to loss of lives and property.

The project will draw on the WWF Kiunga Marine National Reserve (KMNR) Conservation and Development Project, in Kenya¹⁸ model to integrate population growth control mechanisms with livelihoods improvement to reduce pressure on ecosystems and to guide land use on the vulnerable slopes of the mountain that are prone to landslides. The project will equitably target all the gender groups to ensure that issues of importance in family planning such as active participation and acceptance by the men and other gender groups are appropriately addressed. The sites of priority for

¹⁶ <http://www.irinnews.org>; Uganda; One Million Tress for Mt. Elgon Region, 3rd November 2010; IRIN News

¹⁷ <http://www.docs.mak.ac.ug>; Landslides in a densely populated county at the foot slopes of Mount Elgon (Uganda): Characteristics and causal factors, 2005

¹⁸ <http://www.worldwildlife.org/what/communityaction/people/phe/family/familyplanningprojects.html>

the project will be the sub-counties of Bududa District bordering MENP, that is, Bulucheke, Bunamubi, Bubiita, and Bumayoka sub-counties.

Project interventions:

- Collaborate with the Ministry of Health (MoH) to provide family planning facilities for improved access to information about family planning
- Sensitize the communities about the benefits of small families versus large families, reproductive, maternal and child health and improved natural resources management
- Collaborate/coordinate with District Health Services and community CBOs to train community-based health workers and agents to distribute contraceptives as well as sensitizing the beneficiaries about modern family planning methods and health promotion

3.4.5 Result 1.3 Environmental monitoring and regulation of oil and gas activities in the Albertine Graben strengthened

3.4.5.1 Strengthening environment monitoring and regulation of oil and gas activities in the Albertine Graben

Rationale:

Since 1925 when the potential for petroleum exploration was established in the Albertine Graben, the area has attracted oil and gas development attention. The area has since been divided into various oil exploration areas. These include Area 1, 2, 3A, 4B and 5, which are licensed to oil companies for exploration, development and production. However, as much as the oil and gas resources present opportunities for the economy, the resources also present environmental management challenges for the Albertine Graben. The cumulative impacts of these oil and gas investments need to be assessed and monitored to foster sustainable implementation of the oil and gas development in the Albertine Graben, which is a sensitive biodiversity hotspot. In addition to various laws, regulations and policies that can be applied to environment management, the Government has initiated various programmes including the strategic environment assessment process, development of an environmental monitoring program, etc.,. At the same time, promoting effective environmental and social best practices in key energy developments (including oil and gas) is one of WWF-UCO's key strategic objectives (WWF UCO, 2011). However, the capacity of Government institutions such as the Local Governments and civil society to monitor the oil and gas activities is still limited.

Project interventions:

- WWF in partnership with NEMA, UWA and MEMD to support Albertine District Local Governments to design ordinances and byelaws that help to implement environment laws and regulations related to oil and gas such as the Environment Act, Wildlife Act, EIA guidelines, National Oil and Gas Policy, Petroleum and Petroleum Refinery Bills (2012). Pilot districts will be Buliisa and Nwoya
- WWF to expand the platform of civil society organizations on oil and gas to create a wider national environmental platform for oil and gas. The stakeholders should include the environmental pillar agencies, District Local governments, local community representatives and private sector engaged in oil and gas industry to develop and implement a comprehensive

framework for social responsibility and biodiversity conservation in the Albertine Graben. This will build on the Norwegian Government support to WWF programme related to minimizing the negative impacts of petroleum-related activities on the environment in Uganda. Dialogue across the different players is still limited and this limits consensus and progress on social responsibility. The project will, therefore, consolidate the current efforts by different stakeholders and facilitate dialogue and inclusive planning and decision making on social responsibility and biodiversity conservation especially management of forest reserves in oil and gas exploration areas. (GoU, 2010).

Output 2: Successful Sustainable land management (SLM) identified and replicated

3.4.6 Result 2.1: Integrated water catchment (watershed) management and SLM promoted

3.4.6.1 Integrated watershed management and SLM for the Semliki River Valley

Rationale:

The River Semliki is a vital ecosystem with the following attributes: It is a trans-boundary river resource shared between Democratic Republic of Congo (DRC) and Uganda, it comprises part of the Albert flats, woodlands and grassland, it is connected to Rwenzori Mountains, it includes Toro/Semliki Wildlife Reserve, and it contains Seasonal swamps and marshes. Despite current initiatives by WWF, the Ntoroko District, NBI and NEMA, the river ecosystem is experiencing management challenges including overgrazing and cultivation up to the river bank, bush burning, loss of tree cover, landslides & soil erosion on the Rwenzori Mountain slopes, river silting and flooding of the plains, Semliki river bank erosion and change of the river course and consequently change of the international boundary with DRC leading to trans-boundary conflicts, loss of land & property-displacing homes, and increased incidences of water borne diseases such as cholera. Priority sites for watershed management and SLM will be Rwamabale around Kakahunda swamp, Rukoola, Bweramule Sub-county in Ntoroko District and the upper catchment in Bundibugyo District.

Project interventions:

- Increase restoration efforts of the river bank by enforcement of the NEMA regulations on rivers, wetlands and lakes
- Development and enforcement of byelaws to control over stocking and overgrazing
- Trans-boundary collaborative management with the DRC side
- Upscale WWF landscape restoration project to cover more areas that interface with the river and its catchment
- Support and upscale the existing community management zoning and fencing of the river bank initiative. Communities recommended ficus and grevillea trees for the fencing

- Integrate SLM practices in the higher slopes of the river catchment: soil water conservation on higher slopes using water harvesting trenches, mulching and agroforestry.

3.4.6.2 Landscape restoration along Upper Manafwa River, Mt Elgon

Rationale:

The Manafwa river system is a key watershed for the Mt Elgon slopes and much of eastern Uganda where it joins the Lake Kyoga system. Mt Elgon is a trans-boundary ecosystem shared by Kenya and Uganda. It is part of the Nile-Victoria catchment whereby the river systems in the area influence regional and international hydrology through Lake Victoria Basin and the Nile Basin (DAAD, 2011). The upper slopes are steep and fragile, yet cultivation is up to the river bank. The land use and traditional farming practices are not compatible with the highland and steep terrain leading to erosion and severe landslides.

Project interventions:

- Soil and water conservation, landscape restoration involving up-scaling the MERECEP, which supported river banks restoration practices through vegetation cover enhancement along the river banks. Collaboration with the MENP management on investing the revenue sharing funds in restoration of the river system by extending the current project on tree planting within the Park to the community areas adjacent to the park
- Establish Village revolving fund for environmental restoration and development of livelihood alternatives to reduce pressure on natural resources.

3.4.6.3 Integrated water resources management and SLM of Mid-stream Lokok river Sub-catchment in Karamoja; a new concept for mid-stream environmental management

Rationale:

The Lokok River is the largest river system in Karamoja region, a semi-arid cattle corridor area in North Eastern Uganda. The Lokok river catchment is an important part of the Lake Kyoga/River Nile system, and supports pastoralism and agro-pastoralism activities in the part of the cattle corridor. The area, however, experiences extended drought periods, limited pasture especially in the dry season, soil erosion, water shortage, pests and diseases, and poor agricultural service delivery (IUCN and ACF, 2011). The 2011 IUCN and ACF study observed distinct characteristics of the different parts (upstream, mid-

stream and downstream) of the Lokok catchment. The upper and downstream parts were found to be less susceptible to erosion, perhaps due to better conservation measures by protected areas (i.e., Kidepo Valley National Park and Mt. Moroto Central Forest Reserve on the slopes of Mt Moroto in the upper stream, and wildlife and forest reserves in the downstream areas). Large parts of the midstream areas in Kotido, Moroto and Napak districts demonstrate unique mid-stream catchment management opportunities for restoration of degraded areas. The degradation in this area is due to pastoralism land management practices (bush fires, overgrazing, etc), tree cutting for charcoal burning, and lack of biodiversity conservation in the community land outside protected areas.

Project interventions:

- Restoration of the Lokok river banks by re-vegetating and establishing new vegetation cover through tree planting of drought resistant trees and up-scaling check dams and valley dams to reduce over concentration of livestock in the few water point areas
- Introducing SLM in the catchment: Agro-forestry, afforestation, mulching and crop residue use, fallowing, low till, livestock manure, re-vegetation of rangelands, Water harvesting, runoff management, and small-scale irrigation based on valley dams and boreholes, gully control measures using stone check-dams, gully cut/reshaping and filling and gully re-vegetation
- Strengthening water user committees; Sensitizing communities on grazing and improved animal husbandry practices – fire, overgrazing especially around water points, cattle markets and kraals and charcoal burning). The priority sites are Kotido Sub-county in Kotido District, Rupa Sub-county in Moroto District and Lorikita Sub-county in Napak District.

3.4.6.4 Developing Lake Nakivale & Lake Kaceera as model lake catchment restoration sites

Rationale:

This project will entail up-scaling of the current IUCN/UNDP project efforts on soil and water conservation in the community to the areas where it is not yet established. To develop the catchment for the two lakes as a demonstration site, there is need to complete the implementation of the Lake Nakivale zoning plan. A zoning plan has been prepared including a tree planting zone (Figure 9). The trees are planted mainly to control siltation from upstream, and also act as a demarcation for the 200m

no encroachment zone of the Lake shore. A 50metre stretch of the lake shore from inland has been planted with grevillea trees, 150metres under natural regeneration down to the water edge. . The zone plan, however, requires enhanced implementation by developing and enforcing byelaws to protect the lake shore restoration zones.



Plate 14: Tree buffer planted along Lake Nakivale to control silting

Project Interventions:

- Up-scaling the current IUCN project efforts on soil and water conservation in the community to the areas around Lake Nakivale and Lake Kaceera where there are not yet established, complete implementation of the lake zone management plan developed under the IUCN/UNDP project especially planting of the trees
- Developing and enforcing byelaws to protect the lake shore restoration zones.

3.4.6.5 Landscape restoration along Rwizi River System: up-scaling river-bank zoning and SLM

Rationale:

The Rwizi River system traverses six districts of Buhweju, Bushenyi, Ntungamo, Mbarara, Kiruhura, Isingiro and Rakai. The mid and down-stream are located in the cattle corridor with severe impacts of prolonged droughts while the upper catchment area has been degraded due to poor farming practices in the hilly areas of Buhweju, and Bushenyi resulting into soil erosion and river silting down-stream. Crop production such as banana has greatly reduced due to loss of soil fertility in the catchment. During the dry season, the river is the major source of water for livestock and domestic use in Mbarara, Kiruhura, Ntungamo, Isingiro and Rakai districts. The NWSC extracts water from the river for water supply to Mbarara town and its surroundings. Sometimes the river dries up in the dry seasons leading to acute water shortage. The 2011 Water Resources Monitoring and Assessment Report (Directorate of Water Resources Management, 2011) indicated that there was a general trend in reducing water levels of River Rwizi between 1998-2010 of over 1m.

Project Interventions:

- Restoration of wetlands in the catchment; Mbarara district local government embarked on efforts to restore wetlands & planting trees on the bare hills;
- Restore vegetation cover on the bare hills and river bank in the catchment covering Buhweju, Bushenyi, Mbarara, Kiruhura, Isingiro, and Rakai districts
- Improve farming practices, soil and water conservation following the example of the Semliki river bank zoning, and integrating SLM practices i.e. Agro-forestry, re-vegetation of riverbanks /afforestation, mulching, fallowing, low till/and livestock manure.

3.4.7. Result Area 2.2: Up-scaling SLM: stepping up to value chains and scaling-out to critical highlands and wetland ecosystems

3.4.7.1 Scaling-up on-going SLM projects: Action on lessons and stepping up to value chains

Rationale:

Based on questionnaire results (Figure 6), the major barriers at district and sub-county levels to scaling-up ongoing initiatives were: inadequate funding (27%), limited trained manpower and logistics such as

farm tools/equipment (12%) and limited awareness and sensitization about participation in ENRM (16%). Inadequate/lack of access to finances and/ or credit facilities by the local communities was mentioned as a key hindrance to up-taking and sustaining farm enterprises and SLM initiatives. Lack of skills and knowledge about SLM techniques, on the other hand, slowed down the adoption rate. Lack of knowledge on value chain and inadequate access to/lack of knowledge on markets were the other capacity gaps commonly reported in consultations with focus groups and CBOs. This project will, therefore, involve extending the ongoing SLM to take on value chain support from production to micro-processing and marketing as well as addressing the key scaling-up barriers identified in the implementation sites, specifically, in Kamuli, Nakasongola, Isingiro and Rakai Districts

Project interventions

Address technological, institutional, infrastructural, skills and funding gaps realized from the lessons learned:

- **Technological:** Undertake research on most adapted crop varieties and agro-forestry tree species (ref community preferences and yield performance)
- **Institutional:** Strengthen administration structures by creating networks and innovation /learning platforms. Farmers in the different sites will be brought together on innovative platforms to interact with relevant stakeholders including policy makers, researchers and professionals to promote soil and water conservation technology development, dissemination and adoption. Helping participating farmers and CBOs to develop or establish mechanisms for monitoring and evaluation of outputs.
- **Skills development:** Improve skills for participating farmers and players for example through exchange visits, farmers' field schools, champion farmers and on farm training.
- **Funding:** Provide/supplement funding to address funding gaps for CBOs that have potential for scaling-up projects and for implementation of existing management plans.

3.4.7.2 Scale- out SLM techniques in new areas: Highland ecosystems of Kabale, Kisoro and Rwenzori

Rationale:

SLM technologies will be scaled out from areas of ongoing projects where commendable progress has been realized especially in **Isingiro** and **Kamuli** Districts to areas of new critical land degradation

/erosion prone areas. Priority will be for highland ecosystems that are experiencing landslides, soil erosion and fertility loss and foothill landscapes interfacing critical wetland ecosystems that are experiencing erosion, silting and flooding.

Project interventions:

- 1) SLM in Highland areas:
 - i. Kabale, Kisoro highlands; expand the SLM activities in Insingiro to other Sub-counties/Parishes that are impacted by heavy runoff and soil erosion
 - ii. Mt. Rwenzori foot hills – up-scaling the WWF landscape restoration project integrating SLM
 - iii. Adopt The International Small Group and Tree planting programme (TIST) SLM approach currently in Bushenyi to the highland ecosystems

3.4.7.3 Scale-out SLM in landscapes around critical biodiversity wetland ecosystems: The Eastern Kyoga landscapes; Katonga wetlands and Victoria fish breeding hotpots

Wetland management was identified as a key management strategy in the environmental hotspots. Thirty one percent (31%) of interviewed stakeholders indicated that wetland management was a critical aspect that needed to be addressed (Figure 8). The Wetlands Strategic Plan, (2001- 2010) highlights the wetlands ecosystems services and values in Uganda as including but not limited to the following:

- Water treatment and purification services: Wetlands ensure that water is relatively clean, by trapping silt and pollutants. For example, the Nakivubo wetland in Kampala can be valued at US\$.7 million a year.
- Making an important contribution to public health and a reduction in health costs.
- Wetland goods and products through crop cultivation, papyrus harvesting, brick making, and fish farming. Approximately US\$ 100,000 is estimated to accrue from these activities.
- Rural households engaged in papyrus harvesting are estimated to be deriving as much as US\$ 200 a year from their wetland activities.
- Water supply: Approximately five million people depend directly on wetlands for their water supply. Using very conservative figures for daily consumption, this means at least 50 million liters a day are extracted from wetlands. At commercial prices for water in rural areas, this amounts to at least US\$ 25 million a year. Wetlands contribute to water supply not only to neighboring communities, but also to most of the population - through groundwater recharging,

water storage, water purification. Wetlands form the backbone of the entire drainage system in Uganda. Apart from Lake Victoria in the south, Lake Kyogga in the centre, and the Rift Valley lakes in the west, most of Uganda's surface water is absorbed and stored in its wetlands. The wetlands function as fresh water reservoirs that slowly release the water, either underground to replenish aquifers, or laterally towards the major drainage basins. The slow release of water increases water availability during the dry season for domestic use, edge cultivation, and livestock watering, and keeps boreholes, shallow wells, and springs functioning properly (The Republic of Uganda, 2001).

However, there are various threats to the various wetland values and functions. Major threats include cultivation, settlements, tree cutting, overgrazing/dairy farming and burning to hunt Sitatunga and other animals. According to the Wetlands Strategic Plan, (2001-2010), incursions in wetlands for cultivation have been due to increasing population pressure and poverty resulting into increased demand on natural resources to meet immediate needs of food, water, shelter and income (Republic of Uganda, 2001). Other reasons for wetlands encroachment revealed in the scoping study are: 1) responding to climate change by cultivating in wetlands as an adaptation mechanism to prolonged drought, and 2) loss of soil moisture to support crop growth.

The project will include eastern Kyoga biodiversity/agricultural landscapes: encroached parts of Katonga wetlands and fish breeding hotspot landing sites along Lake Victoria shores. The following sites were selected for intervention:

i) Lake Kyoga catchment

Rationale:

The Kyoga wetlands are threatened by encroachment and degradation mainly through agricultural land use incursions such as rice growing, vegetable growing and grazing. Issues to address include wetlands encroachment for agriculture and grazing, silting and flooding. Prolonged droughts and limited soil moisture in the upper parts of the catchment compel communities to extend their farmlands in the wetlands areas which retain water and moisture to support crop growth. Flooding and silting caused by poor farming methods in the surrounding uplands and soil erosion lead to impeded drainage, poor wetland vegetation and more flooding

in the wetland and the surrounding areas resulting in reduced wetlands ecosystem functions. The eastern Kyoga wetland system has benefited from the COBWEB joint project by IUCN, Wetlands management Department (WMD), Ministry of Water and Environment (MWE) and Nature Uganda, mainly focusing on piloting and adoption of suitable PA management models. The main objective of the COBWEB project is to establish and strengthen community-based regulations and sustainable management of wetlands with important biodiversity resources. The targeted wetland system comprises of the Lake Bisina-Opeta, a Ramsar site and Important Bird Area (IBA). The SS-ENRM project will focus on up-scaling the UNDP-IUCN project on Lake Bisina-Opeta wetland complex to Awoja, Olweny, Kole, Doho, Namatala and Butaleja wetlands whose surrounding landscapes extend up to the Mt Elgon foot-slopes. The priority site will be Soroti district where silting and flooding has intensified.

Project interventions:

- Up-scaling the TACC project and integrating SLM practices to lower slopes and foothills of Mt Elgon. The SLM practices recommended include agro-forestry, low till (minimal tillage, planting holes with use of manure), mulching and water harvesting trenches especially on hill slopes.
- Integrating SLM technologies in farming methods in the upland areas surrounding the wetlands to reduce on soil erosion/run off and silting.
- Development and support implementation of Wetlands Community-Based Management Plans
- Collaboration with Wetland Department in MWE, to demarcate/gazette critical wetlands such as the Ramsar sites, key wildlife species habitats, key drainage systems, as well as Important Bird Areas and migration sites.
- Supporting Districts to formulate byelaws and ordinances for the wetlands in the project sites
- Tree planting for landscape restoration in the upland areas surrounding the wetlands where charcoal burning and other wood needs have led to the depletion of tree cover. The priority site will be the Awoja wetland in the district of Soroti. Soroti district recorded one of the critical biomass energy deficit areas in the region by the 2005 biomass study (NFA, 2005).

- Introducing SLM practices: low till/livestock manure, runoff control, water harvesting, afforestation, etc.

ii) Community-based wetlands management planning for Katonga River wetlands

Rationale:

The Katonga wetlands are part of the River Katonga which is located in the southwestern part of Uganda, flowing eastwards draining into Lake Victoria. Due to up-warping of the Western Rift Valley part of the Katonga river system flows westwards extending its catchment to Lake Edward thus connecting to the Democratic Republic of the Congo.

The Katonga wetland is important for many values but most importantly, the Katonga Wildlife Reserve. The wildlife reserve is linked to a network of forest-fringed wetlands and hosts over forty (40) species of mammals and over one hundred and fifty (150) species of birds; many of them specific to wetland habitats. Key species include elephant, waterbuck, reedbuck, colobus monkeys, river otters and Sitatunga. However, the wetlands are increasingly threatened by encroachment for cultivation and grazing. Eviction efforts have resulted into violent conflicts with the communities. This requires participatory approaches to planning and decision making, ensuring win-win situations for both the authorities and the communities. The upstream catchments are also experiencing rampant tree cutting for charcoal and poles leading to woody biomass deficits.

Project interventions:

Community-based wetlands management planning to be undertaken for the Katonga wetlands in Sembabule, Lwengo, Masaka and Kalungu Districts. The management plans will primarily address the following:

- Sensitization of communities about wetlands values and functions to enable them understand the impacts of encroachment from agriculture and grazing
- Tree planting and landscape restoration building on the current UNDP supported SLM project
- Introduction/support to energy saving technologies (cook stoves, biogas) to respond to woody biomass deficiencies and establish alternative livelihoods.

iii) Community-based planning for fish breeding hotspots in Lake Victoria wetlands

Rationale:

Working with the Department of Fisheries Resources, the Department of Wetlands Management has identified various fish breeding hotspot sites which are mainly fish landing sites that require concerted conservation efforts by different stakeholders. These include the following:

District	Landing site that are fish-breeding hotspots ¹⁹
Jinja	Musoli; Wairaka
Mayuge	Musubi; Bukoto; Bwandha and Musoli (shared with Jinja)
Namayingo	Busiro; Lugara
Bugiri	Kweende, Namatala, Wakawaka
Mukono	Kasenye
Rakai	Kasensero

A framework management plan has been prepared for the lake shore and a management plan manual produced by the Department of Wetlands (Ministry of Water and Environment)²⁰, but a key gap that remains is the undertaking of preparation of community-based wetlands management plans for each of the identified fish breeding hotspot landing sites. The key issues are silting of wetland areas including the fish breeding grounds, encroachment within the regulated 200m, and over-fishing. In addition, the wetlands around Lake Victoria are under threat mainly due to modification and conversion for industrial growth, commercial agriculture and semi-slum urban settlements, which has resulted into degradation or total destruction of the wetlands. Although the 1994 Kampala Structural Plan designates most of the wetlands as green corridors, many sections of the wetlands have been converted to industrial use or settled by both the urban poor and elite (The republic of Uganda, 2001).

Project interventions:

- Support the development of community-based management plans for three priority fish breeding hotspots, that is, Kasensero in Rakai District; and Musoli and Wairaka in Jinja District. These have established fish processing investors who are essential for development of public

¹⁹ Source: Consultations with Department of Wetlands in the Ministry of Water and Environment (May 2012)

²⁰ Ibid

private partnerships (PPPs) for the management of fisheries resources and wetlands together with the fishing communities (fishermen, fish mongers, processors, and the management entity, the Beach management Units (BMUs)), the Department of Wetlands Management (DWM), the Department of Fisheries Resources (DFR), and the Lake Victoria Environment Management Project (LVEMP). The project will further identify more CBOs and external developers/investors to come up with partnerships enterprises such as eco-tourism (Bird Watching, and nature/community walks) to support wetlands conservation.

- Work with the Department of Wetlands Management to prioritize demarcation of the wetlands around the fish breeding sites as part of the current MWE initiative.
- Support marketing and other value chain components of the fisheries enterprises
- Support development of bylaws and ordinances (at district level) for protection of the wetlands.
- Work with District land boards to include Environment Officers on their land boards so as to minimize or eradicate acquisition of private land titles in wetlands by providing oversight on issuance of certificates/ land titles by the district land boards.

3.4.7.4 Develop Kamuli SLM site as a model for adopting integration of biogas energy into SLM initiatives for up scaling to Bududa and Isingiro based on lessons learnt

Rationale:

This project will up-scale the integration of livestock and crop husbandry targeting multifaceted livelihood alternatives for fuel wood /biogas energy, food security and income/poverty reduction. The concept of integrating biogas technologies with SLM and soil and water conservation initiatives provides opportunity for multiplier effect on livelihoods, improved natural resources conservation and addressing environmental issues. The by-product of biogas will be applied as manure in the planting pits used in the SLM techniques. The biogas will provide access to clean energy as well as saving on the use of the already constrained supply of biomass fuel-wood.

The project will promote integration of biogas technologies in the UNDP/IUCN SLM site in Kamuli as a model and up-scale the concept in other sites based on the lessons learnt. Sites to upscale integration of biogas will be Bududa and Isingiro districts where the agricultural system integrates cattle keeping in crop production yet they are fuel deficient districts.

Project interventions:

- Adopt best practices for biogas energy establishment at household level-using the SNV-Heifer International Model (WWF2011, Clean Energy Stakeholders' Capacity Needs Assessment Study)
- Use champion farmers, farmer schools platform and study visits to sensitize and motivate farmers to adopt the technologies.

3.4.7.5 Gender equity in SLM for sustainable ENRM**Rationale:**

There are clear complementary roles of different gender groups in ENRM especially in the arid /semi arid cattle corridor areas but there is need for more understanding of the roles in adaptive management and extent of climate change and variability impacts for each gender group as a basis for better planning and management. The UNDP SLM project is explicit on including women in the programme but this effort needs to be strengthened by more proactive activities for the women and other gender groups to target complementarities. This project will aim at mainstreaming gender considering equitable participation of men, women, youth and elderly in the SLM programme in Uganda. The priority sites for implementation will be current Kamuli and Isingiro SLM sites , which are proposed as model sites.

Project interventions:

- Undertake Research at graduate and professional level to better understand gender roles, responsibilities and adaptation in ENRM and CCA in the environmental hotspot areas of the Albertine rift and cattle corridor.
- Develop capacity and access to information for Women who have considerably limited in accessing funds to engage in income generating enterprises and existing interventions :
 - i. Training women to do business plans for SLM projects and implementation of appropriate SLM techniques
 - ii. Availing funding for those already involved in the current SLM interventions – seed or revolving fund
 - iii. Availing access to information and education materials about SLM and biodiversity conservation related initiatives targeting women and other gender groups.

- Capacity building for the youth in (Alternative sources of livelihoods) biodiversity and agro-business projects that will relieve pressure on biodiversity and natural resources in the selected districts of Kamuli and Isingiro.

3.4.8: Result Area 2.3: Integrate Management of POPs into Local Government District Development Plans and SLM

3.4.8.1 Integration of POP management into District Development Plans and SLM Practices: The Katonga River Catchment

Rationale:

Current activities for management of POPs in Uganda include; The Lake Victoria Environmental Management Project II (LVEMP) on non-point source pollutants in the Katonga Basin flowing into Lake Victoria (a selected priority hotspot and catchment with highest pollution loads, particularly sediments, nitrogen, and phosphorus)²¹, and industrial pollution in key cities around Lake Victoria. In Uganda key industrial cities for pollution control are Kampala and Jinja.

The proposed UNDP- SS ENRM project will focus on; Katonga River catchment in the districts of Lwengo, Masaka, Sembabule and Kalungu where community based wetlands management planning as part of scaling out SLM for integrated management of critical wetlands ecosystem has been proposed (section 3.4.7.3). The districts of Sembabule, Kalungu, Masaka and Lwengo are part of the cattle corridor where there is potential increase in the use of acaricides and other agro and veterinary chemicals for livestock production. Thus the Katonga catchment is an environmental hotspot with high risk exposure to POPs. The project will work to create synergies with the LVEMP II project that is already working on addressing non-point source pollution issues in the catchment.

Project Interventions:

Building on the LVEMP II Community-Driven Development investments in the SLM practices already taking place in the Katonga River Catchment, the project will undertake the following interventions:

²¹ The United Republic of Tanzania, (2008) Lake Victoria Environmental Management Project II Phase II Project Document.

- Support the district local governments (Sembabule, Lwengo, Masaka and Kalungu) to undertake inventories of POPs.
- Support development of district local government action plans for management of POPs (Sembabule, Lwengo, Masaka and Kalungu) for integration in the District Development Plans and District Environmental Action Plans. The POP action plans may include but may not be limited to the following:
 - i) Analysis of areas and zoning priority areas in the districts with high/potential risks of exposure to POPs
 - ii) Mechanisms for promotion of use of organic pesticides, fertilizers and Integrated Pesticides Management (IPM)
 - iii) Develop demonstration sites of organic farming
 - iv) Inventory of occurrence of POPs in the district
 - v) District Local Governments support/promotion of SLM practices with focus on integrating POP management.
 - vi) Strengthening institutional (ENR sector) capacity at the district (funding, inputs, etc)
 - vii) Creating awareness/sensitization programmes about the dangers and potential risks related to use of pesticides and other agrochemicals
 - viii) Strengthen capacity, information sharing opportunities and networking among Civil Society Organizations in the respective districts
 - ix) Develop guidelines and bylaws that will guide farmers, dealer/traders/suppliers in the proper handling, management, storage, use, application and disposal of agrochemicals.

3.4.8.1 Strengthen monitoring and regulation of POPs pollution in Industrial towns and cities; Kampala City Council

Municipalities generate both biodegradable and non biodegradable materials. There is evidence of the large quantities of plastic and toxic materials, since there is no sorting of waste at source. For example, all the waste generated from Kampala City is not sorted due to lack of proper guidelines on handling toxic and hazardous waste and implementation of the Solid Waste Ordinance (2000). This is exacerbated by the diversity in users of rubbish skips including markets, health centers, garages, households among others. Disposal of such a mixture is very complicated and costly and result to more POPs (dioxins/furans), air pollution and smell.

The manufacturing and importation of plastics continues to develop in Uganda. However the waste and by-products of these processes also end up being handled in the same way as any other waste, either being land filled, burnt openly or incinerated. In Uganda, thousands of tons of plastic products come to the market every day. They include house hold/domestic use materials, electricity insulators, water tanks and sanitation tanks. Some industries in the plastic sector manufacture and /or import polyvinylchloride (PVC) based plastics whose handling after use remains unclear due to lack of proper guidelines. However, chlorinated plastic materials are common that are non- biodegradable and are difficult to dispose of (EarthWatch, 1992 in ENGO-LOGO 2005). PVCs affect human beings and the environment especially through their burning causing release of POPs by products. Key Industrial towns in Uganda where plastics are manufactured are Kampala and Jinja.

The project will build on efforts of the LVEMP II project on control and management of industrial pollution resulting into POPs from wastes e.g. from manufacturing of plastic materials, paints and related products as well as municipal waste. The SS-ENRM project will focus on Kampala City Council Local Government and Jinja District as priority cites.

Project Interventions

- Support Kampala City Council Authority (KCCA) to develop ordinances and guidelines for proper management and disposal of POPs by manufacturers/industries

- Support KCCA to liaise/work with NEMA to develop monitoring plans and regulation of POPs as part of the Uganda NIP process
- Develop guidelines for ensuring that potential POPs stockpiles are disposed of in an environmentally manner
- Build capacity for the municipal councils/LGs to enforce compliance and improved safety of workers in industries, and disposal of wastes etc,
- Create awareness about POPs resulting from industrial wastes and their threat to human health and the environment. The project could support the two LGs in liaison with NEMA to hold public debates, press conferences and media briefings about POPs and their dangers.
- Support development of Public-Private Partnership for establishment of demonstration projects on alternative and environmentally friendly disposal of wastes e.g. alternatives to landfill and incineration.

4. IMPLEMENTATION FRAMEWORK

This chapter presents a suggested framework for implementation of the proposed project interventions. The framework is based on the main objective of this scoping study which is to “identify a focus for the project in terms of areas/sites, stakeholders (local governments, CSOs and communities), and approaches to strengthen capacities to sustainably manage and utilize natural resources, to integrate climate change adaptation and mitigation in activities, and to build climate change resilient societies”. The framework is presented according to the key project outputs: i) Mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated and; ii) Key successful sustainable land management (SLM) practices identified and replicated. For each output and result areas, the following are highlighted:

- i) Project
- ii) Interventions
- iii) Sites
- iv) Institutions identified for implementation
- v) Indicators for monitoring and evaluation
- vi) Assumptions

More details are provided in Table 3

4.1 KEY CONSIDERATIONS FOR IMPLEMENTATION

The following considerations will be key for implementation of the proposed interventions:

- 1- Capacity of the local communities and District Local Government (DLGs): The participation of local communities and DLGs in the project as the land users and managers will be important and relevant for the sustainability of the interventions even after the projects have ended. In the planning of the project, an exit strategy was elaborated including assurance of participation of communities in all the activities and full engagement with the local government leadership.
- 2- As considered in the project design, knowledge management and transfer for sustainability will be important during implementation.
- 3- Gender dimension: Gender has been considered in this study and an intervention specifically to address gender equity in SLM proposed (Section 3.4.7.5). However, the project design is that gender perspectives will be included at every step of the project and this should be in all the interventions proposed.
- 4- Monitoring and Evaluation: For efficient implementation, a monitoring and evaluation framework is proposed in Section 4.3.

4.2 MONITORING AND EVALUATION FRAMEWORK FOR PROPOSED INTERVENTIONS

In this section, a monitoring and evaluation framework is suggested as a tool to support implementation of the proposed interventions. The framework is linked to the project sites through indicators for measuring success (Table 3). The M&E is further linked to knowledge management by ensuring record keeping and management. The framework, therefore, includes the following elements:

- 1- Systematic recording of progress ensuring participation of all the key stakeholders e.g., generating quarterly reports. This can be better done in a management information system (see recommendations (Section 5.1)
- 2- Evaluation of progress versus the indicators (Table 3), also ensuring participation of the key stakeholders in the evaluation. The Evaluation should be built in the implementation process and this can be made easier through the management information system if established.

Table 3 Logframe of project interventions, sites, institutions and indicators

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
Output 1: mechanisms for enhancing biodiversity conservation and restoration of degraded ecosystems demonstrated				
<i>Result 1.1 Community forestry and private woodlots in Albertine Forests enhanced</i>				
<p>Build capacity of communities for community forestry on public and private forest enclaves outside protected forest reserves by strengthening existing associations along Budongo Forest as models for extending the associations to new areas in the Albertine Rift Forest edges:</p> <ul style="list-style-type: none"> -Strengthening the community forest management committees by meeting forums and training in record keeping, monitoring and evaluation -Implement community forest management plans e.g., enrichment planting, etc.; -Support non- forest destructive enterprises such as bee keeping; -Agro-forestry to provide tree resources and soil/water conservation -Planting of trees in non-farm/woodlot sites such as village paths/access roads to increase tree cover and conservation 	<p>Budongo sub-county, Budongo forest edges in Masindi District: Motokayi, Terenge, Ongo, Kanyege, and Ewafara</p>	<p>Primary: MWE/FSSD, Masindi LG</p> <p>Others: 1.Community forest management committees 2. Communal Land Associations 3. WWF 4. CBOs, e.g., CODECA 5. ECOTRUST 6. NFA</p>	<ul style="list-style-type: none"> • Number of existing community forest associations supported • Number of activities with existing community forest associations • Number of new associations formed 	<ul style="list-style-type: none"> • Communities are willing to participate • Masindi District has the capacity to manage and monitor the associations

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
<p>Promoting tree planting on private land in the Albertine Graben for alternative livelihoods: integrating eco-tourism and ecosystem services:</p> <ul style="list-style-type: none"> Sensitization and training of District Local Government staff and communities in ecosystems and ecotourism concepts oriented to forestry Prepare and implement an integrated ecosystems and ecotourism plan oriented to forestry 	<p>Albertine districts of Arua, Nebbi, Nwoya, Buliisa, Ntoroko, one sub-county in each district depending on the ecosystems/ecotourism plan</p>	<p>Primary: GEF-SGP Others:</p> <ol style="list-style-type: none"> DLGs CBOs: ARPFOCA; Aliomuke Women Farmers Association; Communal Land Associations; Sub-county leadership NFA UWA CARE Uganda 	<ul style="list-style-type: none"> Number of people sensitized on ecosystems and ecotourism concept oriented to forestry Ecosystems /ecotourism plan in place Acres of land under established private forests Number of Community groups /households under the ecosystem/ecotourism programme Number of ecotourism facilities 	<ul style="list-style-type: none"> Districts and Communities understand ecosystems/ecotourism concepts in relation to forestry District and Sub-county leadership have the capacity to manage and monitor activities
<i>Result 1.2 Biodiversity Conservation and social economic livelihoods in PA-edge communities strengthened</i>				
<p>Integrated tree planting and bee keeping for problem animal control; income and wood fuel for PA edge communities:</p> <p>A site around QENP -Kashoya Kitomi Forest Reserve: up-scaling existing initiatives in Rubirizi District, Kicwamba sub-county. Strengthening the current bee keeping initiative to include packaging and marketing of the honey and tree planting to provide for bee hives and firewood needs.</p> <p>Kochgoma Sub-county, Nwoya District to the north of Murchison Falls National Park: Tree planting for wood fuel, and bee keeping for problem animal control especially elephants following the Rubirizi initiative</p> <p>Buliisa District at Wanseko, and Mubako areas where crocodiles and hippos are a major issue - crocodile fences to minimize crocodile attacks.</p> <p>Karusandara Sub-county in Kasese District: tree planting and bee keeping</p>	<p>Kicwamba sub-county in Rubirizi District and other sub-counties bordering QENP – Kashoya Kitomi Forest Reserve boundaries; Kochgoma Sub-county, Nwoya District to the north of Murchison Falls National Park: Buliisa District at Wanseko, and Mubako areas; and Kasese District in Karusandara Sub-county</p>	<p>Primary: GEF-SGP, UCOTA Others:</p> <ol style="list-style-type: none"> DLGs Rubirizi, Nwoya, Kasese, Bullisa UWA CBOs: Ahakungu Bee keepers Association; Bunyaruguru Community Farmers Association Wansenko BMU Tropical Bee Keeping Institute 	<ul style="list-style-type: none"> Acres of land under tree planting and bee keeping along proposed PAs Number of associations supported in the value chain bee keeping and marketing Number of problem animal incidents 	<ul style="list-style-type: none"> Capacity of the Local Government and associations to manage and monitor the activities UWA and NFA support The honey will be marketable Communities will avail land for the woodlots for bee keeping
<p>Eco-tourism development in PA –edge community land areas for improved livelihoods:</p> <p>Sango bay Forest edges - in Rakai District based on Sango Bay Forest trails and backcloth industry/ganda culture based</p>	<p>Sango Bay Forest/wetlands Rakai District ;</p>	<p>Primary : GEF-SGM, UCOTA Others: DLGs</p>	<ul style="list-style-type: none"> Number of ecotourism plans developed and implemented Number of tourism facilities and services developed 	<ul style="list-style-type: none"> Communities are willing to participate Communities have the capacity : skills

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
on ficus trees. Eco-tourism development in Lake Bisina – Lake Opeta Ramsar wetlands in NE of Uganda: The project will involve up-scaling of biodiversity /ecotourism development initiatives building on the concluding COBWEB project in the same site. The site will be linked to the site of Mt. Elgon and Kidepo tourist circuits (under UWA consideration), sport hunting in the wetlands complex and implementing the management plan that is being developed for the Pian-Upe PA that incorporates management of the wetlands complex	Lake Bisina – Lake Opeta Ramsar wetlands in NE of Uganda	IUCN UWA MWE-DWM CBOs		and financial capital to invest in eco-tourism <ul style="list-style-type: none"> Tourism private developers invest in the area to augment project efforts
Family planning facilities and sensitization for better management of land resources and conservation in PA Edge Communities of Mt. Elgon in Bududa where there are over-populated vulnerable mountain slopes and opportunities to extend the Taungya system being implemented in MENP	Bududa District, Mt Elgon in the sub-counties bordering MENP: Bulucheke, Bunamubi, Bubiita, and Bumayoka sub-counties	Primary : WWF Others: 1. Ministry of Health (MoH) 2. Bududa DLG - District Health Office 3. Sub-county leadership 4. MENP	<ul style="list-style-type: none"> Sensitization materials on Family planning and environment Number of Sensitization seminars on family planning and environment Number of families receiving family planning services from the project 	<ul style="list-style-type: none"> Capacity of the Bududa DLG to manage and monitor the program Communities to understand the linkages between family size and natural resources management
<i>Result 1.3 Environmental monitoring and regulation of oil and gas activities in the Albertine Graben strengthened</i>				
Support Albertine District Local Governments to design ordinances and byelaws that help to implement environment laws and regulations related to oil and gas such as the Environment Act, Wildlife Act, EIA guidelines, National Oil and Gas Policy, Petroleum and Petroleum Refinery Bills (2012).	Buliisa and Nwoya Districts	Primary : NEMA, WWF Others: 1. Buliisa and Nwoya DLGs 2. MEMD 3. UWA	<ul style="list-style-type: none"> Number of ordinances and byelaws formulated and implemented Number of Communities sensitized about the ordinances and byelaws 	Buliisa and Nwoya DLGs have the capacity to formulate environmental ordinances and byelaws for oil and gas
Expand the platform of civil society organizations on oil and gas to create a wider national environmental platform for oil and gas. The stakeholders should include the oil and gas environmental pillar agencies, District Local governments, local community representatives and private sector engaged in oil and gas industry to develop and implement a comprehensive framework for social responsibility and biodiversity conservation in the Albertine Graben	National level platform for the whole Albertine Graben	Primary: WWF Secondary: 1. SCOs involved in Albertine Graben: WCS, International Alert; etc 2. UWA	<ul style="list-style-type: none"> Expanded national platform of civil society organizations in place Comprehensive framework for social responsibility and biodiversity conservation in the Albertine Graben 	Stakeholders are willing to participate

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
		3. Tourism players: AUTO. Lodges etc, 4.MEMD 5. NEMA 6.Oil and gas companies 7. CBOs in environment and oil and gas sector		
Output 2: Successful Sustainable land management (SLM) identified and replicated				
<i>Result 2.1: Integrated water catchment (watershed) management and SLM promoted</i>				
Integrated watershed management and SLM for the Semliki River Valley and catchment : Enforcement of the NEMA regulations on rivers wetlands and lakes; byelaws on grazing; Trans-boundary collaborative management with the DRC side; implementation of the zoning plan; live fencing of the banks and introducing SLM : rain water harvesting trenches, gully filling, mulching and agro-forestry on higher parts of the catchment	Semliki River in Ntoroko District: Rwamabale Sub-county around Kakahunda swamp, and Rukoora in Ntoroko District, the upper catchment in Bundibugyo District.	Primary: WWF Others: 1. Ntoroko, Bundibugyo DLGs 2. NEMA 3. MAAIF 4.MWE	<ul style="list-style-type: none"> Byelaws on grazing management in place Acreage of river bank under zoning plan Agreements and meetings with DRC ENRM institutions Number of SLM practices implemented 	<ul style="list-style-type: none"> The District has the capacity to formulate the byelaws DRC institutions are willing to cooperate Communities are trained in SLM Communities are willing to participate
Landscape restoration along Upper Manafwa River, Mt Elgon: rain water harvesting trenches, gully filling, mulching and agro-forestry; Soil and water conservation, landscape restoration involving up-scaling the MERECEP supported river banks restoration practices through vegetation cover enhancement along the river banks; Collaboration with the MENP on investing the revenue sharing funds in restoration of the river system by tree planting on adjacent community areas; Establish Village revolving fund.	Upper Manafwa river catchment, Bududa District	Primary: MAAIF Others: 1. Elgon Farmers Association (EFA) Bushiyi Sub-county 2. MWE 3. Bududa DLG 4. MENP	<ul style="list-style-type: none"> Number of community groups /households practicing SLM Village revolving fund programme in place Number of households on the revolving fund 	<ul style="list-style-type: none"> Communities willing to adopt SLM practices Partners willing to invest in revolving fund

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
Integrated water resources management and SLM of Mid-stream Lokok river Sub-catchment in Karamoja; a new concept for mid-stream environmental management: Introducing SLM in the catchment: Agro-forestry; afforestation; mulching; fallowing; low till/ livestock manure; re-vegetation of rangelands; water harvesting, runoff management, small-scale irrigation and gully control measures, etc.	Kotido Sub-county, Kotido District; Rupa Sub-county, Moroto District; and Loliktae Sub-county in Napak District	Primary: IUCN Others: 1. Kotido , Moroto and Napak DLGs 2. Water user committees 3. MAAIF 4. NAADS 5. MWE	<ul style="list-style-type: none"> Number of households practicing SLM Number SLM practices /water harvesting techniques adopted 	<ul style="list-style-type: none"> Farmers are willing to adopt SLM practices
Developing Lake. Nakivale and Lake. Kaceera lake restoration in Isingiro and Rakai Districts as model lake catchment restoration sites	Landscape around Lake Nakivale and Lake Kaceera in Isingiro and Rakai Districts	Primary: MAAIF Secondary: 1. Isingiro and Rakai DLGs 2. Community associations , e.g., current farmer groups of Ruhimbo, Kabingo, Rwendama, and Kigyende in Isingiro 3. NAADS	<ul style="list-style-type: none"> Number of SLM projects taken up Number of farmers /households under SLM Number of SLM practices adopted 	<ul style="list-style-type: none"> Communities are willing to participate Districts have the capacity to manage and monitor activities
Landscape restoration along the Rwizi River System-Up-scaling river bank zoning and introducing SLM practices : Afforestation and water harvesting in the upper catchment and Agro-forestry, re-vegetation of riverbanks /afforestation, mulching; fallowing; low till/ and livestock manure in the downstream areas	Rwizi River banks and catchment in Buhweju, Bushenyi, Mbarara , Kiruhura, Isingiro, and Rakai Districts	Primary: MAAIF Secondary 1. DLGs: Buhweju, Bushenyi, Mbarara, Kiruhura and Rakai 2. CBOs 3.NAADS	<ul style="list-style-type: none"> Number of SLM projects taken up Number of farmers /households under SLM Number of SLM practices adopted 	<ul style="list-style-type: none"> Communities are willing to participate Districts have the capacity to manage and monitor activities

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
<i>Result 2.2: Up-scaling SLM: stepping up to value chains and scaling-out to critical highlands and wetland ecosystems</i>				
Scaling-up on-going SLM projects: Action on lessons and stepping up to value chains: value addition and marketing	Kamuli, Nakasongola, Isingiro and Rakai Districts	Primary: GEF-SGM Others: 1. DLGs 2. CBOs : E.g., Tubasaliza Kisalizi Women Farmers Group, Nakasongola District; Ruhimbo, Kabingo, Rwendama and Kigyende SLM groups	<ul style="list-style-type: none"> • Number of SLM projects implementing value chains • Number of farmers /households taking engaged in value chains 	<ul style="list-style-type: none"> • Farmers understand value chains and benefits • Farmers have the capacity to undertake value chains
Scale- out SLM techniques in new areas: Highland ecosystems of Kabale, Kisoro and Rwenzori	Kabale, Kisoro and Rwenzori highland ecosystems	Primary: IUCN, AHI/ICRAF Others: DLGs CBOs e.g., Elgon Farmers Association based in Bushiyi S/C MAAIF NAADS ICRAF/AHI	<ul style="list-style-type: none"> • Number of SLM projects taken up • Number of farmers /households under SLM • Number of SLM practices adopted 	<ul style="list-style-type: none"> • Communities are willing to participate • Districts have the capacity to manage and monitor activities
Scale-out SLM in landscapes around critical biodiversity wetland ecosystems: The Eastern Kyoga landscapes: Up-scaling the UNDP-IUCN project on Lake Bisina-Opeta wetland complex to Awoja, Olweny, Kole, Doho, Namatala and Butaleja wetlands and surrounding landscapes up to the Mt Elgon foot-slopes, which is implementing biodiversity conservation integrated with SLM practices, low till/livestock manure, runoff control, water harvesting and afforestation among others Community –based wetlands management planning for Katonga River wetlands Community-based planning for fish breeding hotspots in peri urban Lake Victoria wetlands, involving PPPs.	<ul style="list-style-type: none"> • L. Bisina-Opeta wetland complex and Awoja, Olweny, Kole, Doho, Namatala and Butaleja wetlands. The priority area will be Awoja wetland in Soroti District • Katonga river banks and catchment in Sembabule, Lwengo Masaka and Kalungu Districts • Kasensero landing site in Rakai District; 	Primary : IUCN Others 1. MWE-DWM 2. DLGs 3. MAAIF -DFR 4. NEMA 5. BMUs 6. Fish processing companies in Jinja and Rakai fish breeding/landing sites 7. LVEMP 8.CBOs: E.g., Soroti Rural Development Agency	<ul style="list-style-type: none"> • Number of new SLM sites for SLM implementation • Number of farmers /households under SLM • Number of SLM practices adopted • Number of wetlands management plans prepared • Number of PPP agreements • Number of tourism facilities established 	<ul style="list-style-type: none"> • Communities are willing to participate • Communities have acquired SLM skills • Central and Local governments the capacity and resources to manage and monitor the activities

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
	and Musoli and Wairaka landing sites in Jinja District			
<p>Develop Kamuli SLM site as a model for adopting integration of biogas energy into SLM initiatives</p> <p>Up-scaling integrated SLM/biogas to Bududa and Isingiro based on lessons learnt from Kamuli model site</p>	<ul style="list-style-type: none"> • Bulawori Sub-county , Kamuli District • Isingiro and Bududa District 	<p>Primary: MAAIF</p> <p>Others</p> <ol style="list-style-type: none"> 1. DLGs 2. MEMD 3. CBOs 	<ul style="list-style-type: none"> • Number of integrated SLM/Biogas projects taken up • Number of farmers /households integrating SLM/Biogas 	<ul style="list-style-type: none"> • Communities are willing to participate • Communities have the capacity –skills and capital to implement SLM and biogas technologies • Districts have the capacity to manage and monitor activities
<p>Mainstreaming gender in SLM for sustainable ENRM: Research undertaken to better understand gender roles, responsibilities and adaptation to climate change and variability in SLM project areas</p> <p>Capacity in business planning , information and funding (seed or revolving) fund for Women who are considerably limited in access to funds to engage in income generating enterprises and SLM interventions</p> <p>Capacity building for the youth in SLM practices alternative sources of livelihoods e.g. biodiversity and agro- business projects related to SLM that will relieve pressure on biodiversity and natural resources</p>	Proposed SLM Model sites in Kamuli and Isingiro	<p>Primary : GEF-SGM</p> <p>Secondary:</p> <ol style="list-style-type: none"> 1.DLGs 2.MAAIF 3.MOGLSD 4. Makerere University , college of Agricultural and Environmental Sciences 	<ul style="list-style-type: none"> • Number of research studies on gender and SLM • Number of women trained in SLM /business • Number of youth engaged in SLM projects 	<ul style="list-style-type: none"> • There are qualified researchers interested in the study • The gender groups – women and youth are willing to participate in capacity development
Result Area. 2.3: Integrate Management of POPs into Local Government District Development Plans and SLM				
Integration of POP management into District Development Plans and SLM Practices: The Katonga River Catchment: Develop district action plans for management of POPs, building on the already existing efforts of the LVEMP II to control non-point source pollution through Community Driven SLM investments. Build capacity of DLG and CSOs to develop POPs action plans	Proposed catchment districts of Sembabule, Lwengo, Masaka and Kalungu	<p>Primary: GEF-SGM</p> <p>Secondary:</p> <ol style="list-style-type: none"> 1.NEMA 2. MAAIF 3. MWE 4. College of Agricultural and Environmental Sciences 	<ul style="list-style-type: none"> • Number of POPs Action and management Plans developed • Number of training sessions for DLG technical staff • Number of CSOs involved in POPs action planning 	Capacity for management and planning for POPs exists in implementing Partners

Project intervention	Priority geographical areas and sites	Institutions responsible	Indicators	Assumptions
		5. Uganda Coalition for Sustainable Development/LVEMP		
Strengthen monitoring and regulation of POPs pollution in Industrial towns and cities; KCCA. Develop monitoring plan for POPs Support development of ordinances and bylaws/regulations to regulate POPs and industrial waste	Proposed sites of Nakivubo channel: Stretching from Kawempe Industrial area to Murchison Bay on Lake. Victoria	Primary: NEMA Secondary: KCCA, UNBS MWE	<ul style="list-style-type: none"> Monitoring plan for POPs developed Ordinances and regulations/by-laws in place Visibility and awareness about POPs created; number of media reports, number of media briefings and conferences about POPs 	KCCA willing to create partnership with implementing partners Relevant Institutional structure for management of POPs existing in KCCA

5. GENERAL CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

1. There are a number of SLM projects that already exist in the areas covered during the scoping study. These, however, have limited spatial coverage due to various reasons e.g. limited knowledge of information transfer techniques and limited capacity in M&E. SLM up-scaling options were best identified where CBOs had better monitoring and evaluation practices, including documentation of progress and lessons learned.
2. Gender issues played an important role in which SLM technology was adopted, where it was implemented (spatial location) and who implemented it. It also had bearing on determining the level of acceptance of a technology or conservation measure by the community.
3. Information on current initiatives has provided a strong basis for the proposed sites. Data and information on lessons learned will be a strong baseline for continuity in the same sites as well as out-scaling to new areas of intervention. Knowledge management of the proposed interventions will be vital and this calls for emphasis on systematic documentation of project management and progress. A management information system coupled with a GIS for documentation, learning, monitoring and evaluation of progress in biodiversity conservation and sustainable land management in Uganda will, therefore, be required.

5.2 RECOMMENDATIONS

- 1) Increase capacity of CBOs and agencies implementing and coordinating SLM projects:
 - Capacity in M&E. SLM up-scaling options were best identified where CBOs had better monitoring and evaluation practices, including documentation of progress and lessons learned. To enable continuity and project sustainability, M&E practices should, therefore, be integral to project planning and management. The implementing CBOs, NGOs and coordinating government agencies and departments, however, require training in M&E techniques.

- Capacity in technology development, transfer and implementation through farmer-to-farmer approach: A number of CBOs implementing SLM projects have received training in the technologies through study tours, demonstrations and instruction. Some have innovated new ideas after learning lessons from implementation. The members could help develop new and/or transfer the technologies within and outside of the groups. However, those with first hand training are few and they have limited capacity in transferring what they have learned. The few farmers experienced in SLM techniques need to be trained as trainers to enable sustain SLM with limited dependence on external support.
- 2) Appraise identified projects further through participatory logical framework formulation and implementation
 - 3) Project information dissemination plans and strategy should precede implementation to ensure informed participation by relevant stakeholders
 - 4) Integrated water resources management has received considerable attention in ENRM in Uganda. However, much emphasis is on upstream and downstream areas. More emphasis on midstream areas is needed especially in the arid/semiarid areas interfacing mountainous and adjacent foothills. Most of these areas adjoin wetlands and plains where silting and flooding have escalated due to increased rainfall as a result of climate change and variability, and limited soil and water conservation practices.
 - 5) Supporting gender equity in ENRM: To better understand the complementary roles of different gender groups in ENRM and CCA, more research on gender roles and responsibilities in ENRM and CCA in the hotspot areas should be undertaken.
 - 6) Application of geographic Information systems enabled mapping and integration of various criteria for identification of sampling sites and later for mapping current and potential initiatives. The maps and associated database provide a framework for an information system for establishing, monitoring and Evaluation of BD/SLM projects. Expansion of the GIS database developed during this study is, therefore, recommended for identification and management of future interventions.

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ANNEX I SLM PRACTICES (FAO, 2009)

SLM PRACTICES		
Land/water mgt approaches	Land/water mgt technologies	
Land use regimes	Agronomic & vegetative measures	Structural measures
<ul style="list-style-type: none"> • Watershed plans • Community land use plans • Grazing agreements, closures, etc. 	<ul style="list-style-type: none"> • Inter-cropping • agro-forestry in crop or grazing systems • afforestation and reforestation • mulching and crop residue • crop rotation • fallowing • low till • composting/green manure • integrated pest mgt • vegetative strip cover • contour planting • re-vegetation of rangelands • integrated crop-livestock systems • woodlots • alternatives to wood-fuel • Sand dune stabilization, etc. 	<ul style="list-style-type: none"> • Terraces and other physical measures (e.g. soil bunds, stone bunds, bench terraces, etc.) • Flood control and drainage measures (e.g. rock catchments' water harvesting, cut-off drains, vegetative waterways, stone-paved waterways, flood water diversion, etc.) • Water harvesting, runoff management, and small-scale irrigation (shallow wells / boreholes, micro ponds, underground cisterns, percolation pits, ponds, spring development, roof water harvesting, river bed dams, stream diversion weir, farm dam, tie ridges, inter-row water harvesting, half-moon structures, etc.) • Gully control measures (e.g. stone Check dams, brushwood check dams, gully cut/reshaping and filling, gully re-vegetation, etc)

ANNEX II CRITERION MAPS FOR SELECTION OF AREAS OF FOCUS

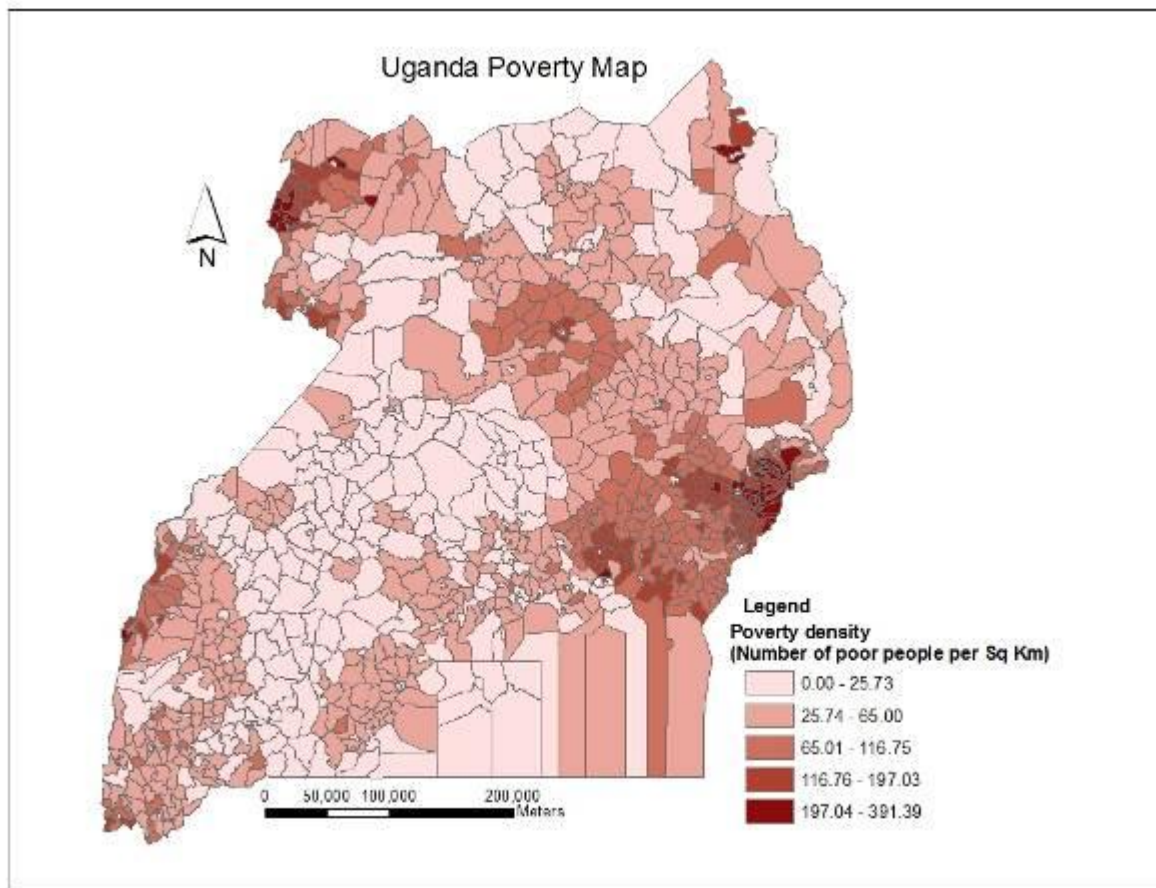


Figure 9: Poverty Density map of Uganda. *Source: WRI, 2005*

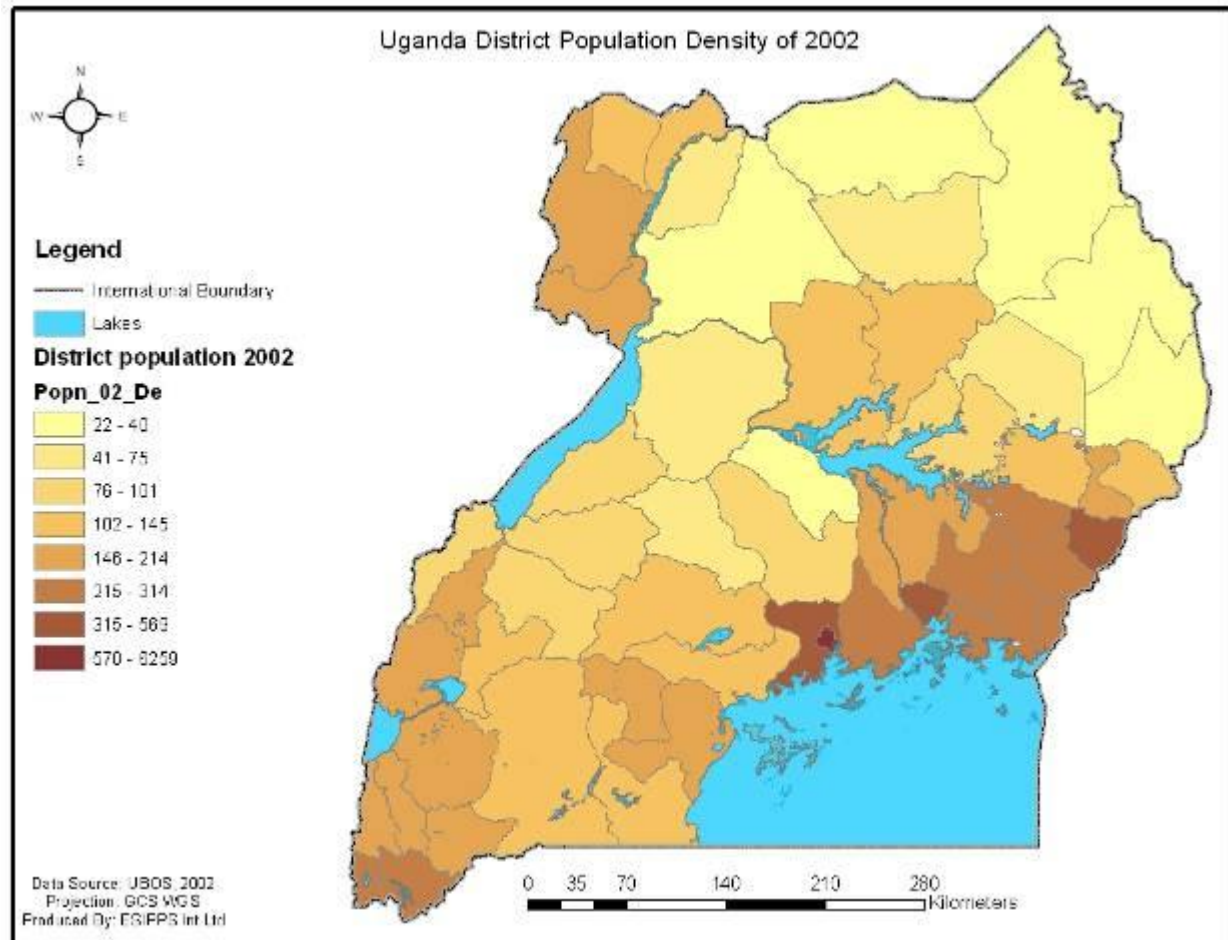


Figure 10: Population Density map of Uganda, 2002. *Source: UBOS, 2002*

ANNEX III UGANDA GOVERNMENT LAWS, PLANS, POLICES AND PROGRAMMES ON ENRM

Framework	Provisions relevant to the environment and natural resources management
Forestry and Planting Act (8/2003)	<ul style="list-style-type: none"> Legal framework for management of forest resources
Local Government Act	<ul style="list-style-type: none"> Decentralized (devolved) management of land-based resources
National Environment Act cap 153	<ul style="list-style-type: none"> Development and promotion of environmental policy guidelines and standards
Land Act cap 227	<ul style="list-style-type: none"> Legal Framework for management of land and land resources
National Environment Policy (1995)	<ul style="list-style-type: none"> Stakeholder participation Policy guidelines for Environmental Management of which climate change and land degradation are a part
The National Agricultural Policy (NAP)	<ul style="list-style-type: none"> Government will work on constraints that hinder the private sector to invest more in agriculture Agricultural development will be pursued according to the 2004 zoning strategy by MAAIF that divided the country into ten agricultural production zones Agricultural development services will be provided to all farmer categories as individuals or in groups, ensuring gender equity. Government will continue to provide agricultural services through the decentralized system of government and will work to strengthen it. government shall pay special attention to parts of the country with specific needs and marginalized groups Government will ensure that key agricultural resources including soils and water for agricultural production are sustainably used and managed to support current and future generations
Forest Policy (2001)	<ul style="list-style-type: none"> Maintenance of Permanent Forest Estate Policy guidelines for Sustainable Forest Management
Wildlife Policy (1999)	<ul style="list-style-type: none"> Conservation of forests in Wildlife Protected Areas Policy guidelines for Management of Wildlife and Wildlife Protected Areas
District Ordinances and Byelaws	<ul style="list-style-type: none"> Environmental management
National, Districts and Sector Development Plans	
National Development Plan (2010)	<ul style="list-style-type: none"> The NDP interventions aim at creating employment, raising average per capita income levels, improving the labour force distribution in line with sectoral GDP shares, raising country human development and gender equality indicators, and improving the country's competitiveness to levels associated with middle-income countries. Within the NDP, land degradation relevant policy intervention are addressed by individual Sector objectives;
Agricultural Sector Development Strategy & Investment Plan: 2010/11 - 2014/15 (Agriculture for Food and Income Security)(DSIP):	<ul style="list-style-type: none"> The DSIP visions "a Competitive, Profitable and Sustainable Agricultural Sector". It specifically aims to implement, at a program level, interventions that seek to Enhance Production and Productivity; Market Access and Value Addition; Improving the Enabling Environment for the Agricultural; and Institutional Development. Two of these programme level interventions address issues related to land degradation in the agriculture sector.
Uganda Strategic Investment Framework for Sustainable Land Management 2010 – 2020 (U-SIF-SLM):	<ul style="list-style-type: none"> The goal of U-SIF-SLM is to promote key sectors cooperation to improve natural resource based livelihoods and other ecosystem services. The development objective is to strengthen sector cooperation in order to halt, reverse and prevent land degradation/ desertification and to mitigate the effects of climate change and variability.
Uganda National Adaptation Programmes Of Action (NAPAs):	The NAPAs identified the immediate adaptation needs for Uganda, which spell out the strategies for enhancing adaptation to, and mitigation of, the negative

Framework	Provisions relevant to the environment and natural resources management
	<p>effects of climate change and variability. These are:</p> <ol style="list-style-type: none"> Community Tree Growing; Land Degradation Management; Strengthening Meteorological Services; Community Water and Sanitation; Water for Production; Drought Adaptation; Vectors, Pests and Disease Control; Indigenous Knowledge (IK) and Natural Resources Management; and Climate Change and Development Planning.
National Forest Plan (2002)	<ul style="list-style-type: none"> Sustainable forest management Maintenance of Permanent Forest Estate
District Development Plans	<ul style="list-style-type: none"> Environmental Action Plans District Forest Plans
Regulations	
Environmental Impact Assessment Guidelines	<ul style="list-style-type: none"> Regulating environmental aspects of developments and development planning in relation to environmental management standards and requirements.
The National Environment (Hilly and Mountainous Area Management) Regulations, 2000:	<ul style="list-style-type: none"> The guidelines spell out the rules and guidelines for soil conservation; however, it does not guide on what strategies should implemented to ensure sustainable soil and water conservation. There is generally need to improve on the actual implementation of the regulations and guidelines through improved enforcement.
Stockholm Convention on Persistent Organic Pollutants (POPs) 2004	<ul style="list-style-type: none"> It seeks to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically and accumulate in the fatty tissue of humans and wildlife. The Convention requires Parties to take measures to eliminate or reduce the release of POPs into the environment. Uganda ratified the convention in 2004 and prepared in fulfillment of obligations, the National Implementation Plan (NIP), 2008.
Convention on Biological Diversity (CBD), 1992	<p>This convention has three objectives:</p> <ol style="list-style-type: none"> Conservation of biological diversity The sustainable use of its components; and The fair and equitable sharing of the benefits rising out of the utilization of genetic resources.

ANNEX IV INSTITUTIONS AND PERSONNEL CONSULTED

S/n	Institution/office	Name and designation	Tel Contact	Email contact
1.	UNDP in Uganda office including GEF/SGP staff	MR. DANIEL OMODO MC-MONDO Programme analyst , Energy and Environment Unit	0772439928	daniel.omodo@undp.org
2.	WWF Uganda Country Office (WWF-UCO)	MR. GERALD KAIRU Project manager, SS-ENRM CCA	0776446892	gkairu@wwfuganda.org
3.	WWF Rwenzori Mountain Environmental and Conservation Management Project	Polycarp Mwima Project Manager	0772602697	pmwima@wwfuganda.org ; iebong@wwfuganda.org
4.	IUCN Uganda Country Office	MR. ROBERT BAGYENDA Programme Officer – Water & Wetlands IUCN - International Union for Conservation of Nature Uganda Office	0772457164	Robert.BAGYENDA@iucn.org
5.	ICRAF /African Highlands Initiative office in Uganda	DR. J. TUKAHIRWA	0772786816	j.tukahirwa@cgiar.org , jmbtukahirwa@yahoo.co.uk
6.	Parliamentary Committee on Natural Resources	HON. F. NABUGERE		
7.	National Environment Management Authority (NEMA), Plot 17/19/21, Jinja Road, Kampala	DR. F. D. K. BAGOORA Natural Resources Management Specialist (Soils & Land Use)	0772551340	fbagoora@nemaug.org
8.	National Forestry Authority (NFA), Nakawa	MR. LEVI ETWODU	0772581494	
9.	Wetlands Department, MWE			
10.	Uganda Wildlife Authority (UWA)	MR. CHARLES TUMWESIGYE	0772461908	charles.tumwesigye@ugandawildlife.org
11.	"	MR. EDGAR BUHANGA	0772450468	edgar.buhanga@ugandawildlife.org
12.	National Planning Authority			
13.	Ministry of Water and Environment (MWE) Luzira	MR. S. ETIMU MS. T. TINDAMANYIRE	0703527801	
14.	Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Nakasero	MR. L. TIBESIGWA KAFUUZI MR. N. H. OPOLOT MR. F. AKENA		
15.	Ministry of Finance and Economic Development (MoFPED)			
16.	Ministry of Tourism, Wildlife and Antiquities	MR. JAMES LUTALO	0772587807	

S/n	Institution/office	Name and designation	Tel Contact	Email contact
		Commissioner, Wildlife		
17.	Climate Change Unit , Nakawa	MR. M. SEMAMBO	0704993344	
		MR. H. BBOSSA	0701823482	
18.	Directorate of Water Resources Management			
19.	Ministry of Energy and Mineral Development			
20.	Ministry of Local Government	MRS. MARGARET LWANGA	0772422947	
21.	Makerere University School of Agriculture and Environmental Sciences	MS. S. KAGOYA AGRICULTURAL PRODUCTION	0772510390	
22.	Ministry of Gender, Labour and Social Development			
23.	CARE International, Uganda office	MR C. OUWOR	0794673929	
24.	Uganda Wildlife Society	DR. PRISCILLA NYADOI Executive Secretary		pnyadi@uws.or.ug ; pnyadi@forest.mak.ac.ug uws@uws.or.ug
25.	Nature Uganda			
26.	Advocates Coalition for Development and Environment (ACODE)			
27.	Environmental Alert	MR. CEASAR KIMBUGWE	0712564542	
28.	WCS Uganda Office Plot 802, Mitala Road, Kansanga P.O Box 7487 Kampala UGANDA	DR. ALASTAIR MCNEILAGE Country Director	0772709754	amcneilage@wcs.org
29.	National agricultural Research Institute (NARO)	DR. EVELYN KOMUTUNGA Agronomist/Agro-Meteorologist NARL-Kawanda /NARO	0772573687	komutungae@gmail.com
30.	The National Fisheries Resources Research Institute (NaFIRRI)			
31.	National Forestry Resources Research Institute (NaFORRI)			
32.	Uganda Tree Growers Association			
33.	UGASTOVE	MRS. KUTEESA RUTH	0772642275	
34.	Uganda Climate Alliance			
35.	Oxfarm GB Muyenga	MS. M. KANSIIME	0712834551	
36.	Kampala City Council Authority (KCCA)			

S/n	Institution/office	Name and designation	Tel Contact	Email contact
37.	Nakasongola District Local Government	Mr. JIM KUNOBERA Environment Officer	0772576570	jimkunobera@gmail.com
38.	Tubasaliza Kisalizi Women Farmers Group, SLM Initiative, Nakasongola District			
39.	Vurra Sub-county, Arua District	MR. OMBATIA RICHARD LC III Chairperson		
40.	Vurra Sub-county, Arua	MR. DRATELE RICHARD Community Dev't Officer		
41.	Vurra Sub-county, Arua	MR. AFEKOR JAMES Sub-county Chief		
42.	Aliomuke Women Farmers Association, Tree Nursery Management Arua			
43.	Arua District Local Government	MR. JOACHIM NDIANDU, Environment Officer	0774926267	Jandiandu@yahoo.com
44.	Buliisa District Local Government	MR. PHILLIP KUTEGEKA, Environment officer	0772487542	pikutegeka@yahoo.com
45.	Hoima District Local Government	MS. JOSELINE NYANGOMA Environment officer	0772628153	joselinenyangoma@yahoo.com
46.	Masindi District Local Government	MR. N.S. WILLIAM , Environment Officer	0772380840	nsmwilliam@yahoo.com
47.	"	MR. SIMON District Forest Officer		
48.	Ntoroko District Local Government	MR. HERBERT KAMUHANDA Environment Officer	0782319316	kamuhandaherbert@yahoo.com
49.	Rakai District Local Government	Mr. JAMIL KIYINGI Environment Officer	0772623619	jamilkiyingi@yahoo.co.uk
50.	Isingiro District Local Government	MR. JOSEPH MWESIGYE Environment Officer	0772607047	mwesigyejoseph@yahoo.com
51.	Rubirizi District Local Government	MR. WILLIAM TAYEBWA Environment Officer	0772370091	wilytayebwa@yahoo.com
52.	Kamuli District Local Government	MR. ROBERT ISABIRYE Environment Officer	0772361135	alupar@yahoo.com
53.	Bududa District Local Government	MR. MICHEAL MUSAMALI DFO/Natural Resources Officer	0785836638	mmmusamali@gmail.com

S/n	Institution/office	Name and designation	Tel Contact	Email contact
54.	Soroti District Local Government	MR. OPOROT FRANCIS Environment Officer	0782800692	ochaitum@yahoo.com
55.	Kotido District Local Government	MR. KIYONGA JOSEPH Environment Officer	0772859759	kiyongajoseph@yahoo.co.uk
56.	Nwoya District Local Government	MR. EMMANUEL OMARA Environment Officer	0782484421	omaraemmanuel@yahoo.com
57.	Kasese District Local Government	MR. AUGUSTINE KOOLI Environment Officer	0782544911	Kooli2aug@yahoo.com
58.	Ssembabule District Local Government	MR. ATHANANSIUS LWANGA Environment Officer	0772565445	athanlb@yahoo.com
59.	Mitooma District Local Government	MR. NABOTH BAGUMA Environment Officer	0772553072	nabothbaguma@yahoo.com
60.	Wanseko Sub-county, Buliisa District	Fisheries Extension Officer		
61.	Sub-county Rep, Wasenke			
62.	Tengere Community Forest Association, Masindi District	MR. MAFAYO DAVID Committee Chairperson,		
63.	Bweramule Sub-county, Ntoroko District	Sub-county Chief		
64.	Kisina Tweimukye Association, Landscape Restoration Nyakatoke Ntoroko District			
67.	Isingiro SLM project site	MR. GUMISIRIZA BENJAMIN Model Farmer-SLM initiative, Isingiro District		
68.	Queen Elizabeth National Park, Rubirizi District	DR. MARGARET DRICIRU Senior Warden	0772432470	
69.	Queen Elizabeth National Park; Rubirizi District	MR. BENON MUGYERWA Warden Community Conservation	0772686069	
70.	Ahankungu Beekeepers Association, QENP	MR. JAFALI Chairperson-	0703271651	
71.	Mt. Elgon National Park, HQ Mbale, Collaborative Forest Restoration initiative	MR. MATANDA RICHARD Warden Community Conservation & MS. PAMELA ANYING Warden Research & Monitoring	0772935812	

S/n	Institution/office	Name and designation	Tel Contact	Email contact
72.	Elgon Farmers Association, Bushiye Sub-county, Bududa	Chairperson/Sub-county Chief		
73.	Soroti Catholic Diocese Development Organization			
74.	Soroti Rural Development Agency			
75.	CEDRESI,CBO Kasese District	MR. MUHESI NICOLAS		

ANNEX V INFORMATION FROM FOCUS GROUP DISCUSSIONS

District/Sites	Key NRs/ecosystems	Ecosystem Services	Critical NR Issues	Climate Change Issues	Current Interventions	Recommendation
<u>Nakasongola</u> Kisizi Parish	Lake Kyoga Wetlands(permanent & seasonal) Rangeland/woodland	Livestock grazing Fuel wood Bee keeping Crop cultivation	-Charcoal burning-as a source of livelihood -Silt of the lake -Lack of water for domestic use and livestock	-Loss of soil moisture and termites due to prolonged droughts	Kisizi Women Farmers Group- Soil moisture conservation through mulching & use of improved seeds- UNDP Supported Project. Climate change adaptation & improved crop production	-Upscale the soil & water conservation project -Promote apiary & fruit beekeeping for alternative livelihoods
<u>Nwoya</u> Lee Parish Aswa Lolim	-District Forest Reserves -Rangelands -Wildlife in & outside MFNP Arable land	-Crop cultivation -Fuel wood -Sport hunting-revenue to district	-Intensive opening up of land for resettlement -Charcoal burning -Resettlement in wildlife corridors; reduced wildlife numbers -Problem animals-elephants		-FEICO tree planting support District local government licensing to regulate charcoal	Upscale the tree planting programme- increased funding and training in tree nurseries
<u>Arua</u> Vurra Sub-county, Eruba Parish	-Ajiyova & Enyau River systems -Wetlands -Community Forest patches Arable Land Ajai Wildlife reserve	-Livestock and domestic water source -Clay & sand mining, -Crop cultivation -Horticulture in the wetlands	-Wildlife poaching, encroachment and boundary conflict -Charcoal burning -Destruction of community forests & woodlands -Breakdown in system	-Late rains & prolonged droughts changing farming seasons -Loss of soil moisture leading to encroachment of wetlands for cultivation -Reduced river volumes (since 2007)) -Reduced crop yield -Increased diseases	Aliomuke Women Farmers: -Established tree nursery and supplying farmers -Promoting woodlot establishment with support from NAADS & NEMA -Protection of communal forests	-Tree planting -Improved farming methods-agro forestry & strip banding -Provide credit facilities to farmers -Demonstration points/centres -Marketing
<u>Buliisa</u> Ngwedo Sub-county Wanseko Fishing village	-MFNP & wildlife -Victoria Nile Delta a Ramsar Site -Victoria Nile -Lake Albert - Rangeland/woodlands -Oil	-Domestic water -Fishing -Fuel-wood for fishing processing - Charcoal -Grazing -Crop cultivation -Oil drilling	-MFN boundary conflict & poaching -Crop raiding & injuries -Fish depletion -Overstocking & overgrazing -Poor soil fertility -Deforestation -Pollution-Noise, water contamination & degradation	Prolonged drought – Sept 2011-April 2012 Effects: Cattle dying, -Reduced fish catch -Lowered ground water table-6 boreholes dried -Reduced water supply -	No ENRM intervention/initiative. Oil company vegetation restoration in drilling sites	-Energy efficient stoves/kilns for fish smoking -Use of charcoal briquettes for fish smoking -Alternative energy-solar & biogas -Efficient charcoal production techniques -Tree seedling supply & tree planting

District/Sites	Key NRs/ecosystems	Ecosystem Services	Critical NR Issues	Climate Change Issues	Current Interventions	Recommendation
			-Bilharzia infestation			-Clean water supply-treated water from lake/river
<u>Masindi</u> Budongo Sub-county, Nyabyeya Parish	-Remnant riverine community forests -Budongo Forest Reserve -Rwensama forest reserve-Nyabyeya -Siiba River & its catchment -Private forests	-Fuelwood -Building materials -water source for domestic use -	-Public forests destruction for expansion of sugar, upland rice, tobacco and local gin brewing, -Charcoal burning & fuelwood-degraded forests	-Late rains and changing growing seasons -Reduced sources of water -Degradation of water catchments	-Establishment of Community Forest Associations (CFAs) to protect forests on public land-supported by CARE through CODECA -4 CFAs formed, registered & with management plans -Local Government Ordinance for CFA supported by WWF	Capacity building for the CFAs committee in community awareness, record keeping etc -Tree planting interventions to establish woodlots & enrichment of the community forests -Fish farming and beekeeping
<u>Ntoroko</u> Bweramule & Nombe Subcounties	-River Semliki -Albert flats, woodlands and grassland -Rwenzori Mountains -Toro/Semliki Wildlife Reserve -Seasonal swamps and marshes	-Grazing (cattle) -Fishing -Water source-domestic & livestock -Crop cultivation	-Flooding of the plains -Landslides & soil erosion on Rwenzori Mountains -River Semliki bank erosion-change of course & international boundary with DRC-transboundary conflicts, loss of land & property-displacing homes Water bone diseases-such as cholera -Overgrazing -Loss of tree cover -River silting -Bush burning	-Prolonged droughts -Strong storms -Drying up of swamps -Unusual flooding of R. Semliki in the dry season (2011)	-WWF Semliki Integrated Water Catchment Management project -Semliki River bank restoration supported by BTC (ended) -Landscape restoration-WWF supported project -Tree planting and strip banding	-Upscale the SIWCM to support community efforts of riverbank restoration -Support implementation of the Bweramule SEAP -Valley dams for livestock -
<u>Kasese</u> QENP	-QENP-wildlife -Lakes Edward & George (a Ramsar site), Kazinga channel -Woodlands, grasslands & forests -Arable land	-Fuelwood -Tourism -Fishing -	-Human-wildlife conflicts -Poaching -Ramsar site (L. George) pollution by KCCL -Wild fires -Habitat changes in the National park, grassland to bush/woodland Overgrazing	-Vegetation changes in the park- drought resistant evasive species	Community initiative for problem animal control using apiary-elephants-piloting at Kicwamba- next at Karusandara Physical removal of evasive from the park	
<u>Rubirizi</u> Kichwamba	QENP National Park, Forest reserves-Kashoya-Kitomi, Kalinzu	Fuelwood sources Water catchment areas	Problem animals/elephants Livestock disease transmission Fuelwood collection Soil erosion and landslides		Ahankungu Beekeeping Group-community-park initiative for problem animal control using apiary along the	Support for efficient energy stoves & water tanks -Tree planting -Capacity building for-Ahankungu

District/Sites	Key NRs/ecosystems	Ecosystem Services	Critical NR Issues	Climate Change Issues	Current Interventions	Recommendation
	Wetlands Crater lakes Arable land Highlands/rift valley escarpment	Water supply sources Crafts Crop cultivation			park boundary -Tree planting- for carbon trade & restoration -	Group-modern bee hives, handling and processing facilities Training, packaging and marketing -Biodiversity management plans -Climate change data collection & information management facilities
Isingiro Kashumba Sub-county	Lakes-Nakivale, Orukinga etc Wetlands Hills Rivers-Rwizi Woodlands & Forests Grasslands	Crop cultivation Fishing Crafts materials Grazing Fuelwood	-Drying/dying of lakes -Heavy run -off and silting of lakes & wetlands -Landslides & soil erosion-gullies -Loss of soil fertility -Overgrazing-barehills -Unsustainable tree cutting Overfishing	-Prolonged droughts -Reduced food production	-Lake Nakivale restoration project-COBWEB, IUCN -Control of landslides and run off-trenches & contour banding	-Upscale lake restoration to cover the whole lake and other lakes -Upscale soil erosion and landslide control -Water harvesting into valley dams for livestock -Energy efficient stoves & biogas -Tree planting on bare hills
<u>Sembabule</u>						
<u>Rakai</u> <u>Kisoga</u> <u>Balikyewunya</u> <u>Kisoga Village</u> <u>Kakuto Parish</u> <u>Kakuto S/C</u> <u>Tukorere</u> <u>Wamu Farmers</u> <u>Field School</u> <u>Katasiba</u> <u>Village</u> <u>Kakuuto S/C</u>	- Bukoola and Taba Wetlands -Tengere forest , natural springs, wildlife : fox, bucks, wild pigs, rabbits, antelopes, hippos, for meat , hunters -Sango bay forest/wetlands are Ramsar site	Timber , local herbal medicine , firewood, water, papyrus for crafts , fish, etc.,	-Banana /coffee diseases, -Reduced soil fertility -reduced wild animals due to expanding agricultural activities -wetlands drainage/cultivation - water pollution – diseases -livestock diseases	-Rainfall variability /changes in onset of rain since 2004. There was droughts especially between may and October 2011 and Jan –March 2012 affecting mainly coffee and leading to failure of other crops, -Firewood scarcity -Limited land for cultivation	-Tree planting of ficus and fruit trees by communities -Water harvesting trenches for soil conservation by FAO through KAKODEP by farmer field schools – each farmer has an area of specialization they have learned and transfer their knowledge to other farmers -FIEFOC project : there is an action plan but it has not been implemented -Ecotourism based on backcloth and other crafts is done at individual level -Rakai district has developed an eco-tourism plan	- Control soil erosion by providing implements to use for trenches Train communities in NRM -develop alternative income generation enterprises -integrate livestock with cropping using livestock waste as manure -Biogas project was introduced but few people have the livestock -Tree planting is required but seedlings are needed and land shortage is limiting - develop byelaws on firewood and access to wetlands and forest resources in Tengere forest reserve. -develop ecotourism to expand the backcloth /craft initiatives and link to Sango bay forest wetland which is also a Ramsar site and possible to link to Tanzania circuits. –

District/Sites	Key NRs/ecosystems	Ecosystem Services	Critical NR Issues	Climate Change Issues	Current Interventions	Recommendation
						Support the Rakai District to Implement the existing eco-tourism plan
<u>Kamuli</u> <u>Namasagali</u> <u>and Bulawori</u> <u>Subcounties</u>	River Nile catchment, Cattle corridor, wetlands	Agriculture, water, pasture, firewood, fish, crafts, poles, for fencing etc.	- Poor agricultural practices/over-cultivation, soil erosion, soil exhaustion, poor yield and unstable markets -Firewood issues due to tree/forest clearing for sugarcane growing -Termites -wetlands encroachment /reclamation of Tabu-Kiko wetlands for rice and sugar growing is tampering with the water system	-Droughts – since 2006 the onset has changed from February to April leading to crop failures -Ground water harvesting tanks have been introduced but about 30 tanks are still required and the capacity of the tanks needs to be increased from 15,000 to the 30,000 capacity to cater for longer seasons.	-UNDP supported SLM project including: water harvesting trenches, mulching, tree planting, grass bands, basins and gaps for maize, use of L-bridges to keep water /divert it to the garden, training of farmers, study tours, water harvesting ground tanks, herbicide application (diagro) etc. - FIEFOC Project	Enforcement of environmental regulations is limited because of limited capacity of the District staff – they have limited financial resources. The farmers need support to add value to their fruits (mangoes, passion, oranges, etc and maize– process, package and market -Farmer to farmer training by getting the farmers who have trained to train others in need to make training in SLM sustainable and easier to upscale
<u>Bududa</u> Bushiyi Sub-county	-National Park-MENP -Catchment for Rivers-Manafwa, Irimi, Rwakaka Forests Wetlands Hills/highlands	Water source for domestic & livestock Fuelwood, bamboo, wild mushrooms Cultivation	Landslides & soil erosion Soil degradation Park-encroachment Forest destruction Land shortage River flooding & silting Water pollution Overpopulation	-Prolonged heavy rains -Flooding -Loss of property & lives	-UWA-Community collaborative forest restoration -UNDP-TACC project for tree planting, energy cooking stoves, soil & water conservation & livelihoods -MERCEP-river bank restoration & tree planting and village revolving fund	-Improved livelihoods to reduce pressure on NRs -Upscale riverbank restoration, tree planting -Upscale NAADS enterprise support target-1000hh in the Sub-county -Sensitisation about benefits of small families & family planning
<u>Soroti</u> Arapai Sub-county	Permanent swamps-Awoja river/swamp system pouring into L. Kyoga Seasonal swamps Forests- Central & Local Government Woodlands	Rice and vegetable cultivation Grazing Fuelwood/energy source	Poor farming methods around wetlands- Soil degradation and erosion Siltation of swamps Cultivation in swamps Charcoal burning on public land	-Heavy rains for a short time (uneven distribution) -Prolonged droughts -Reduced soil moisture -Flooding -Loss of biodiversity; crested crane now rare -Change in wetland vegetation-reduced sages	SORUDA- Local NGOs promoting agroforestry NAADS livelihood enterprise programme-	-Soil & water conservation to reduce soil erosion & moisture loss Improve soil fertility in the upland areas Climate change adaptive land use planning Upscale enterprises promotion to reduce pressure on wetland

District/Sites	Key NRs/ecosystems	Ecosystem Services	Critical NR Issues	Climate Change Issues	Current Interventions	Recommendation
						cultivation. Focus on Awoja wetland
<u>Kotido</u> Sub-county, Romrom Parish	Lokok & Lokere River systems flowing into L. Kyoga Wildlife-Bokora corridor Rangeland & woodland	Grazing Water source-livestock & domestic Fuelwood & charcoal burning Construction materials for manyattas	High runoff & water shortage Food security Loss of vegetation & tree cover Rangeland degradation Soil erosion Siltation of rivers Overstocking/Overgrazing	Flash floods Prolonged droughts		Water harvesting both at household level & dams, check dams etc. Improved seeds & farming (soil & water conservation)-food security Tree planting Employment opportunities for demobilized youth. Project site-Kotido Sub-county