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USAID/UGANDA ENVIRONMENTAL THREATS AND OPPORTUNITIES ASSESSMENT (ETOA)



MARCH 10, 2011

This report was produced for review by the United States Agency for International Development (USAID). It was prepared by International Resources Group (IRG).

COVER PHOTO: The ETOA team participates in a meeting with communities adjacent to Mt. Elgon National Park to gain a better understanding of local peoples' attitudes towards the protected area.

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ACRONYMS

| | |
|--------|--|
| ACCRA | Africa Climate Change Resilience Alliance |
| ADS | Automated Directive System |
| AfDB | African Development Bank |
| ASRDEM | Associates for Strategic Resource Development and Environmental Management Limited |
| BINP | Bwindi Impenetrable National Park |
| CAN-U | Climate Action Network-Uganda |
| CBNRM | Community-based natural resources management |
| CBD | Convention on Biological Diversity |
| CBO | Community-based organization |
| CCU | Climate Change Unit |
| CDCS | Country Development Cooperation Strategy |
| CFM | Collaborative Forest Management |
| CFR | Central Forest Reserve |
| CITES | Convention on the Illegal Trade in Endangered and Threatened Species |
| CLA | Collaborating, Learning, and Adapting |
| CMA | Collaborative management agreements |
| COBS | Conservation of Biodiversity program |
| CSO | Civil society organization |
| CWCT | Chimpanzee Wildlife Conservation Trust |
| DANIDA | Danish International Development Agency |
| DfID | United Kingdom Department for International Development |
| DO | Development Objective |
| DRC | Democratic Republic of Congo |
| DSIP | Development Strategy and Investment Plan |
| DWRM | Directorate of Water Resources Management |

| | |
|--------|--|
| EIA | Environmental impact assessment |
| EM DG | Energy and Minerals Donor Group |
| EMP | Environmental Management Plan |
| E/NR | Environment/ Natural Resource |
| ETOA | Environmental Threats & Opportunities Assessment |
| EU | European Union |
| FAA | Foreign Assistance Act |
| FAO | Food & Agriculture Organization (UN) |
| FD | Fisheries Department |
| FFNC | Faculty of Forestry and Nature Conservation |
| FFP | Food for Peace |
| FIEFCP | Farm Income Enhancement and Forest Conservation Program (AfDB) |
| FR | Forest Reserve |
| FSSD | Forest Sector Support Department |
| FTF | Feed the Future |
| GDA | Global Development Alliance |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GHG | Greenhouse gas |
| GIS | Geographic information system |
| GMP | General Management Plans |
| GOU | Government of Uganda |
| GTZ | German Agency for Technical Cooperation |
| HCW | Health Care Worker |
| IDP | Internally displaced people |
| IR | Intermediate result |
| IRG | International Resources Group |
| IEE | Initial Environmental Examination |

| | |
|---------|--|
| ITFC | Institute of Tropical Forest Conservation |
| IRS | Indoor residual spraying |
| ITN | Insecticide treated net |
| IUCN | International Union for Conservation of Nature |
| JGI | Jane Goodall Institute |
| KCCL | Kasese Cobalt Corporation Limited |
| KfW | Reconstruction Credit Institute (Germany) |
| KNP | Kibale National Park |
| LEAD | Livelihoods and Enterprises for Agricultural Development |
| LFR | Local Forest Reserve |
| LG | Local government |
| LMNP | Lake Mburo National Park |
| MAB | Man and Biosphere (UNESCO) |
| MAAIF | Ministry of Agriculture, Animal Industries and Fisheries |
| MEMD | Ministry of Energy and Mineral Development |
| MFNP | Murchison Falls National Park |
| MoH | Ministry of Health |
| MoU | Memoranda of Understanding |
| MTTI | Ministry of Tourism, Trade and Industry |
| MUBFS | Makerere University Biological Field Station |
| MUIENR | Makerere University Institute of Environment and Natural Resources |
| MUST | Mbarara University of Science and Technology |
| MWE | Ministry of Water and Environment |
| NAADS | National Agricultural Advisory Services |
| NaFORRI | National Forest Resources Research Institute |
| NAPA | National Adaptation Plan of Action |
| NARO | National Agricultural Research Organization |
| NCF | Nordic Climate Facility |

| | |
|---------|---|
| NDA | National Drug Authority |
| NDP | National Development Plan |
| NEMA | National Environmental Management Authority |
| NGO | Non-governmental organization |
| NFA | National Forest Authority |
| NP | National Park |
| NR | Natural resources |
| NRM | Natural resources management |
| NURP | Northern Uganda Reconstruction Program |
| NWSC | National Water and Sewerage Corporation |
| PA | Protected Area |
| PAMSU | Protected Area Management and Sustainable Use |
| PEAP | Poverty Eradication Action Plan |
| PEPD | Petroleum Exploration and Production Department |
| PERSUAP | Pesticide Evaluation Report-Safe Use Action Plan |
| PFE | Permanent Forest Estate |
| PMA | Plan for Modernization of Agriculture |
| PRDP | Peace Recovery and Development Plan |
| PoA | Program of Activities |
| QENP | Queen Elizabeth National Park |
| QEPA | Queen Elizabeth Protected Area |
| RDD | Regional Drought Decision |
| REDD | Reducing Emission from Deforestation and Forest Degradation |
| SO | Strategic Objective |
| SOW | Scope of Work |
| SPGS | Sawlog Production Grant Scheme |
| SpO | Special Objective |
| STAR | Sustainable Tourism in the Albertine Rift |

| | |
|--------|---|
| SUAP | Safe Use Action Plan |
| THF | Tropical high forest |
| UNADA | Uganda National Agriculture Input Dealers Association |
| UNCCD | United Nations Convention to Combat Desertification |
| UNDP | United Nations Development Program |
| UNEP | United Nations Environment Program |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UPDF | Uganda Peoples Defence Force |
| URWA | Uganda Rainwater Association |
| USAID | United States Agency for International Development |
| Ushs | Uganda shillings |
| UTB | Uganda Tourist Board |
| UWA | Uganda Wildlife Authority |
| VC | Value chain |
| WCS | Wildlife Conservation Society |
| WFP | World Food Programme |
| WILD | Wildlife, Landscapes, & Development for Conservation |
| WMA | Wildlife Management Area |
| WMD | Wetland Management Department |
| WFP | World Food Programme |
| WRMD | Water Resources Management Departme |
| WWF | World Wildlife Fund |

EXECUTIVE SUMMARY

This Environmental Threats and Opportunities Assessment (ETOA) was primarily prepared to respond to FAA Sections 118 “Tropical Forests” and 119 “Endangered Species,” which require that all country plans include:

- An analysis of the actions necessary to conserve tropical forests and biodiversity (discussed in Section 5.3); and
- The extent to which current or proposed USAID actions meet the needs (discussed in Section 5.3).

USAID/Uganda is currently developing a multi-year Country Development Cooperation Strategy (CDCS). Although the CDCS is in its final phase of review, the Mission expects the ETOA to inform its strategic planning process by identifying linkages between the environment/natural resource sector (E/NR) and other priority development themes and by providing analysis to inform biodiversity priorities. In fact, the draft CDCS states that the analyses included in the 118/119 Report may lead to adjustments in its strategic focus.

The ETOA team reviewed reports related to biodiversity conservation in Uganda, held meetings with USAID staff and with environment/natural resources sector stakeholders, including USAID’s implementing partners, and conducted site visits to eastern, northern, and western Uganda, in the Albertine Rift. Following the investigation phase, the ETOA team identified the main threats, root causes, and actions needed to address the threats and the extent to which USAID is addressing the actions needed. Based on this analysis, on identified gaps in biodiversity conservation, and on USAID’s comparative advantage, the ETOA team developed recommendations to USAID (Section 6). The ETOA also includes an assessment of the potential environmental impacts of the actions proposed in the CDCS (Annex A) and the cross-sectoral linkages between the E/NR focus areas and the other strategic areas of the CDCS; recommendations based on this assessment are in Section 6.

Uganda’s biodiversity faces a wide range of threats, and it would not be an exaggeration to say that Uganda’s biodiversity is at significant risk. Among the threats, the ETOA team identified two “game-changing threats” and actions needed to address them (these are described in detail in Annex J):

1. Oil sector development:

Results of oil and gas exploration have shown substantial commercial quantities within Kabwoya Wildlife Reserve and Murchison Falls National Park and the adjoining areas. Exploration is ongoing in Queen Elizabeth National Park, Semliki, Bugungu, Ajai, and East Madi Wildlife Reserves. The entire Albertine Rift, where exploration is occurring and where production will begin by 2012 is a globally important hotspot of biodiversity where 14 of Uganda’s national parks and wildlife reserves are located.

The ETOA team identified the following actions needed to address the oil sector threat:

- Provision of external technical expertise in environmental and social impact evaluation, mitigation, and monitoring of oil sector development

- Strengthening the internal expertise of Uganda Wildlife Authority (UWA), National Forest Authority (NFA), National Environmental Management Authority (NEMA), and Wetlands Department to evaluate impacts, identify practical mitigation, and monitor oil sector activities
- Strengthening of E/NR policies and appropriate government actions to mitigate potential environmental and social impacts of oil sector development
- Establishment of a quick response mechanism to access technical capacity in environmental and social aspects of oil sector development
- Raising awareness of government decision-makers of the ongoing “land-grabbing” and of the potential social and environmental impacts that it can be expected to cause
- Strengthening of CSOs to provide oversight of the oil sector, and of government actions
- Establishment of a biodiversity conservation fund whose proceeds can be used to finance conservation priorities.
- Establishment of water quality monitoring plans and provision of equipment.
- Establishment of emergency/oil spill preparedness plans and provision of equipment.

Annex J of the ETOA provides recommendations to USAID, including suggestions for public-private partnerships, to address these needs.

2. Land use conflicts around protected areas:

Widespread, frequent, and severe conflicts are occurring as a result of movements of wildlife from inside protected areas into the surrounding agricultural and pasture lands. While Uganda’s principal attraction for tourists is the wildlife they can see in its national parks and reserves, the savannah habitats upon which the grazing animals depend are being displaced by woodland habitat. Consequently, some species of animals move outside of the protected areas seeking food and water. UWA is still plagued by an outdated management style of “resource custody” as opposed to a more dynamic and scientifically based ecosystem approach. If UWA fails to change its approach from conflict management to ecosystem management, increased incidences of human-wildlife conflict are expected to result as a direct result of the high human population growth rate around the Protected Areas (PAs). This could result in political decisions to minimize the size of PAs or in complete de-gazettement of some PAs.

The poorest bear the brunt of these conflicts since they are the ones who live around the PAs and rely on agriculture as their main source of livelihood. The conflicts decrease public support of Uganda’s PAs to the point where proposals to de-gazette will find few who object. The conflicts undermine the entire PA system, which is the basis of tourism, a major generator of revenue for Uganda, and the basis of USAID/Uganda’s eco-tourism pillar. Measures for dealing with conflicts have been: fences (they are expensive and not ecologically sound), trenches (expensive and not highly effective controls for many animals), killing animals (this is after the damage has occurred, and fails to address the real issue). None of these offer sustainable, practical, and strategic solutions.

Actions needed to address the threat of conflict between protected areas and communities are:

- Strengthened political will at central and local government levels to address the problems
- Implementation of a harmonized, collaborative approach
- Strengthened capacity to manage conflicts using an ecosystem, landscape-based approach

- Conservation of corridors
- Ongoing, sufficient financing

Section 6 includes recommendations for USAID to address these needs. The ETOA team recommends a strategic approach based on landscape level threats to biodiversity, implemented in a coordinated fashion with the Uganda Wildlife Authority, National Forest Authority, local governments, private sector enterprises, and communities. The recommendation is to adjust the strategic focus of the Country Development Cooperation Strategy (CDCS) (Development Objective 1, IR 1.3) from a focus on eco-tourism to a more inclusive focus on reducing conflicts over land uses around PAs through improved management of the PAs themselves, thereby strengthening the basis for nature-based tourism in Uganda.

The main challenge the ETOA team faced was that it was impossible to meet with government entities directly involved in oil exploration and production plans, including environmental review. Meetings requested with GOU institutions (Petroleum Exploration and Production Department [PEPD], Ministry of Energy, NEMA) were refused (the ETOA team was told to provide a formal request from USAID to PEPD, then from PEPD to NEMA before permission could be granted for one meeting, and to submit a proposal to PEPD in order to get permission to visit the oil sites in the Albertine Rift – essentially, roadblocks placed to deny the team relevant meetings and site visits). In addition, obtaining information (reports, assessments) on oil production plans and impacts was difficult, and the team found that very little information was available to the public. However, once the ETOA team was in the field, gaps in information were filled by site visits and interviews with UWA staff and non-governmental organizations (NGOs).

I. INTRODUCTION AND LEGAL REQUIREMENTS (FAAS 117, 118, AND 119)

As stated in the Environmental Threats & Opportunities Assessment (ETOA) Scope of Work (SOW), the purpose of the USAID/Uganda ETOA is to: 1) conduct a country-wide assessment of biodiversity and tropical forestry conservation needs and related issues; and 2) evaluate the Mission's contribution to those needs. The report is meant to serve as a planning tool to assist USAID/Uganda to integrate environmental concerns into their overall program.

The ETOA is being conducted to comply with sections 117, 118, and 119 of the Foreign Assistance Act (FAA) of 1961, as amended; and country strategy guidelines under the Automated Directive System (ADS) 201.3.4.11 and ADS 204.5. As described in FAA 118/119 Best Practices (Byers, 2005), some missions have chosen to combine the mandatory FAA 118/9 analyses with an early, strategy-level review – a preview into the potential environmental impacts at the strategy phase – which can provide guidance to Strategic Objective (SO) Teams when later preparing Initial Environmental Examinations (IEE) at SO or activity level. This strategy-level review also helps strengthen cross-sectoral linkages.

According to FAA Section 117 “Environment and Natural Resources,” it is mandatory for operating units to implement their programs with an aim to maintain (and restore) natural resources upon which economic growth depends, and to consider the impact of their activities on the environment. The legal requirements of FAA 117 are reflected in USAID's ADS Chapter 204 and in 22 CFR 216, USAID Environmental Procedures, and are meant to “ensure that environmental factors and values are integrated in A.I.D. decision making processes.” Annex A addresses FAA 117.

FAA Sections 118 “Tropical Forests” and 119 “Endangered Species” codify U.S. interests in these topics. The FAA provisions require that all country plans include:

- An analysis of the actions necessary to conserve tropical forests and biodiversity (discussed in Section 5.3); and
- The extent to which current or proposed USAID actions meet the needs (discussed in Section 5.3).

FAA Sections 118 and 119 are specific legal requirements for all USAID operating unit strategic plans.

USAID/Uganda has chosen to prepare an ETOA, in accordance with FAAs 117, 118, and 119. Therefore, in addition to the FAA 118/119 requirements, the ETOA will describe potential environmental impacts – at the strategy level – of the USAID/Uganda Country Development Cooperation Strategy (CDCS) and make recommendations for integrating environmental concerns and linkages into USAID's program.

A previous ETOA was conducted in 2001, followed by a 118/119 Biodiversity and Tropical Forest Assessment in July 2006. As stated in the Scope of Work (Annex B) for this ETOA, since 2006 there

have been a number of significant developments in Uganda, particularly the return to peace and the discovery of oil reserves in the Albertine Rift Region. This ETOA considers these developments, as well as the expanded scope of programmatic and Presidential priorities, such as climate change and food security. The ETOA also provides a brief evaluation of the 2006 118/119 report, with a focus on lessons learned for the current ETOA (Annex C).

TIMING OF THE ETOA IN RELATION TO THE CDCS

USAID is currently developing a multi-year CDCS that will replace the 2002-2007 Integrated Strategic Plan. Although the CDCS is in its final phase of review, the Mission expects the ETOA to inform its strategic planning process by identifying linkages between the environment/natural resource sector (E/NR) and other priority development themes and by providing analysis to inform biodiversity priorities. In fact, the CDCS states that analyses including the 118/119 Report may lead to adjustments in strategic focus. Given the timing of the ETOA in relation to the CDCS, the ETOA has the potential to inform USAID strategy, as well as project design.

METHODOLOGY FOR CONDUCTING THE ETOA

The ETOA was conducted by a six-person team with three members from International Resources Group (IRG) and three from a local consulting firm, Associates for Strategic Resource Development and Environmental Management Limited (ASRDEM). IRG provided the Team Leader/International Senior Natural Resources Specialist, the International Senior Natural Resources Specialist-Forestry, and the International Climate Change Specialist. ASRDEM provided a Senior Environmental Management Specialist, Local Environmental Policy Analyst, and a Logistics Coordinator. Biological sketches of the team members are in Annex D.

Prior to beginning work in-country, the Team Leader held telephone interviews with US-based stakeholders (see Annex E for a list of contacts). The ETOA team worked in-country for three weeks. Upon arrival in Uganda, the team held a Mission-wide in-briefing, and then met with USAID strategic objective (SO) teams and program offices, and with implementing partners and other stakeholders in biodiversity conservation and general environmental conservation and management.

At the in-briefing, the ETOA team was asked to respond to a request from USAID/Washington for additional climate change-related information. The response to this information request is included as Annex F.

The team split into two groups to conduct field visits. One group spent three days in the field, in eastern Uganda – Mbale, Bududa, and Kapchorwa districts, Mt. Elgon National Park, and local communities around the park. The group focused on analyzing the threats to the Mt. Elgon National Park landscape, including population growth, charcoal production and firewood collection, unsustainable agricultural practices (farming on steep slopes with little or no erosion control), and agricultural expansion. The other group spent eight days in the field, and went north to Gulu, and then west and south along the Albertine Rift, visiting eight protected areas (PA) and their surroundings and interviewing staff members of the Uganda Wildlife Authority (UWA), local government officials, and staff of conservation projects. The team's Climate Change Specialist remained in Gulu and interviewed stakeholders there and visited project sites. He held consultations with the USAID-Livelihoods and Enterprises for Agricultural Development (LEAD) team and visited one of the farmer groups (*Lubanga pe ol*) LEAD currently supports in Koro, Gulu district. The meeting with LEAD focused on the implementation strategy and involvement of farmers at all levels and how climate change adaptation mechanisms are integrated into current LEAD programs. The meeting with the farmer group helped to gauge their perception and locally held knowledge on climate change and the adaptation strategies they are practicing at a household level.

The list of contacts in Annex E contains the names and contact information of the stakeholders that both groups met with in the field. Information and findings from the field trips are included throughout the ETOA.

Upon their return from the field, the ETOA team continued to meet in Kampala with implementing partners of USAID/Uganda and other stakeholders in conservation projects. The team then held an internal meeting to identify the key threats, root causes, and the actions needed to address the root causes, to evaluate the extent to which USAID is addressing the actions needed, and to develop recommendations for USAID. This meeting took into account information gained from the previous two weeks of meetings and fieldwork. Findings of the meeting are included in Section 5 and recommendations to USAID are in Section 6 and Annex J (Game-changing Threats).

On the final day that the full team was in-country, it debriefed the Mission, with a focus on key findings (threats, root causes, actions needed, extent to which, and recommendations). Within 10 days of departure, the ETOA team submitted a draft, which took into account comments made during the debrief. The final ETOA was submitted on February 22, 2011.

Country Overview

Uganda is a landlocked country on the equator, extending from 1 south to 4 north latitude and 30 to 35 east longitude. It covers 241,038 sq. km; of this area, 43,936 sq. km are water, including wetlands. It lies on the northwestern shores of Lake Victoria and occupies most of the Lake Victoria Basin, which was formed by the geological shifts that created the Rift Valley during the Pleistocene era. The plateau that stretches northward from Lake Victoria declines gradually to an altitude of 914 meters on the Sudan border. The gradually sloping terrain is interrupted by a shallow basin dipping toward the center of the country and small areas of tropical forest, which mark the western border with the Democratic Republic of Congo (DRC).

Both eastern and western borders are mountainous. The Rwenzori Mountains (often called the Mountains of the Moon) form about 80 kilometers of the border between Uganda and the DRC. The highest peaks are Margherita (5,113 meters) and Alexandra (5,094 meters). Farther south, the northernmost of the Mufumbiro volcanoes reach 4,132 meters on Mount Mahavura; 3,648 meters on Mount Mgahinga; and 3,477 meters on Mount Sabinio, which marks the border with Rwanda and the DRC.

Dominating the eastern border with Kenya, roughly 120 kilometers north of the equator, is Mount Elgon, an extinct volcano, which rises from the 1,200-meter plains to reach a height of 4,324 meters. North of Mount Elgon are Kadam (also known as Debasien or Tabasiat) Peak, which reaches a height of 3,054 meters, and Mount Moroto, at 3,085 meters. In the far northeast, Mount Zulia, Mount Morungole, and the Labwor and Dodoth Hills reach heights of over 2,000 meters. The lower Imatong Mountains and Mount Langia, at 3,029 meters, mark the border with Sudan.

Over one-fifth of the total area of Uganda is open water and swamp. Four of east Africa's Great Lakes – Lake Victoria, Lake Kyoga, Lake Albert, and Lake Edward – lie within Uganda or on its borders. Lake Victoria is the second largest inland freshwater lake in the world (after Lake Superior in the U.S.); it feeds the upper waters of the Nile River, which is referred to in this region as the Victoria Nile. Lake Kyoga and the surrounding basin dominate central Uganda. Along the border with the DRC, Lake Albert, Lake Edward, and Lake George occupy troughs in the western Rift Valley. The Victoria Nile leaves Lake Victoria at Owen Falls as it travels toward the northwest and widens to form Lake Kyoga. The Nile receives the Kafu River from the west before flowing north to Lake Albert. From Lake Albert, the Nile is known as the Albert Nile as it travels about 200 kilometers to the Sudan border. The Katonga River flows westward from Lake Victoria to Lake George. Lake George and Lake Edward are connected by

the Kizinga Channel. The Semliki River flows into Lake Edward from the north, where it drains parts of the DRC and forms a portion of the Uganda-DRC border.

While Uganda holds so much biodiversity of regional and global importance within its borders, in size it is slightly smaller than the United States state of Oregon. Within this relatively small area, seven of the 18 bio-geographic regions in Africa are found. The country ranks fourth on the continent in number of bird species (over 1000) and third in number of mammal species (345). In the 1960s, Uganda held the largest mammal biomass (elephants, buffaloes, hippos) globally, and with animal populations again steadily building up in the PAs, Uganda still has the potential to do so.

This quote from the year 2000 (USAID/Conservation of Biodiversity program [COBS]) is still true today, a decade later:

“Inadequate management of these [biodiverse] regions, combined with external pressures brought on by poverty and population growth, place Uganda's unique biodiversity at immediate risk. Managed wisely, Uganda's ecosystems can continue to serve as repositories for biological diversity while providing a foundation for sustainable economic growth.”

Since 2000, however, most of the threats to biodiversity have increased in magnitude and a new threat has materialized – the discovery of oil in the Albertine Rift. Today, the threats to biodiversity that typically result from agricultural production remain, while the threats from industrial and commercial development and the transformation from rural to increasingly urban areas place greater pressure on the natural environment than in 2000. Inadequate management of Uganda’s biodiversity, as stated in the year 2000 COBS report remains a key conservation issue (see Section 5 and Annex J for a detailed discussion of these and other threats).

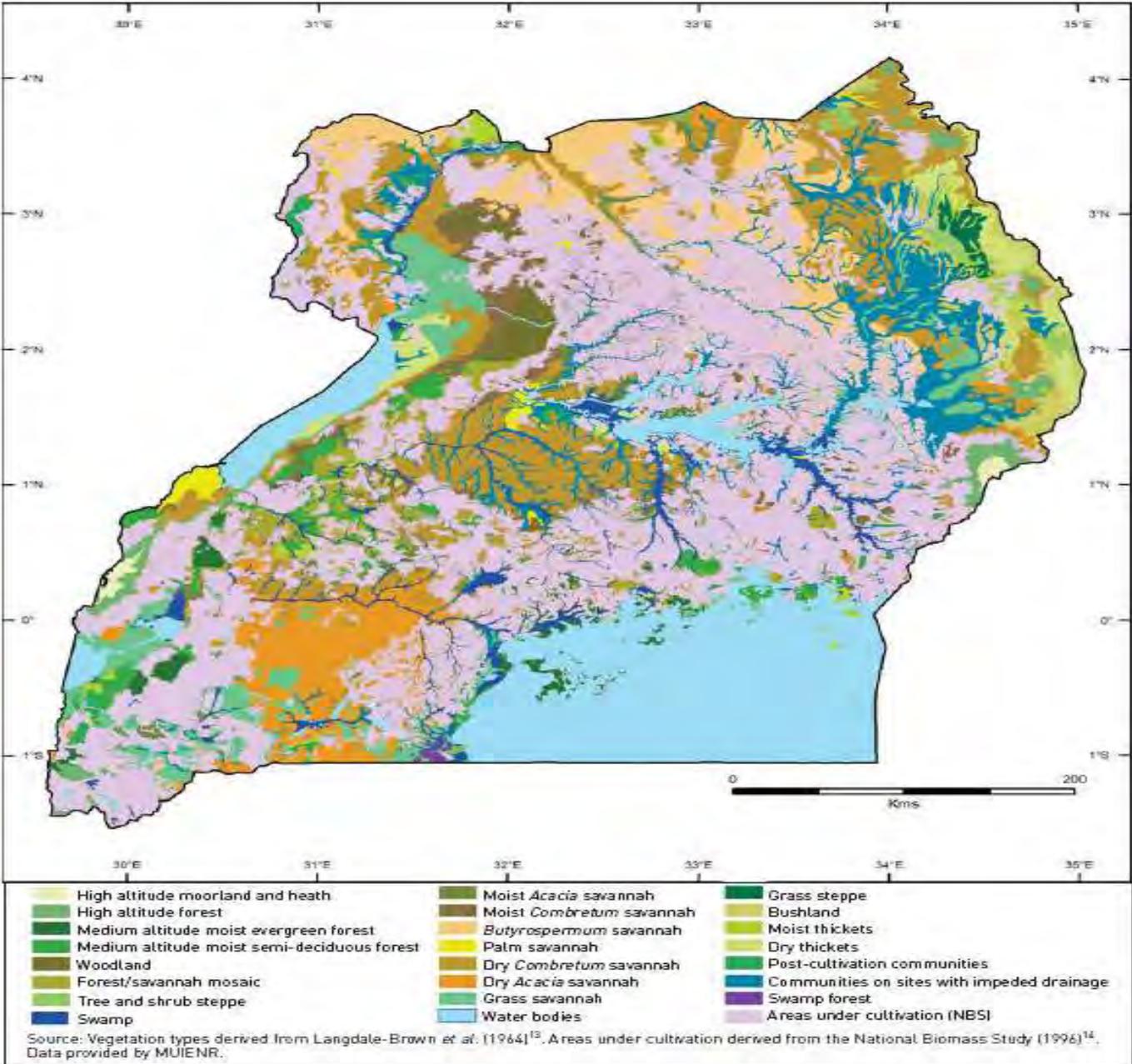
I.1 CURRENT STATUS OF ENVIRONMENTAL ASSETS: DESCRIPTION OF BIODIVERSITY RESOURCES

I.1.1 ECOSYSTEM DIVERSITY

Figure 1 shows the distribution of Uganda’s 24 land uses and vegetation types as shown in the Uganda’s Fourth Report to the Biodiversity Convention (NEMA, 2009). The report, however, does not provide the number of hectares in each of these vegetation types.

The **High Altitude Moorland and Heath** and **Tree and Shrub Steppe** vegetation types occur only in small areas of the Rwenzori Mountains, in the west, and around Mt. Elgon, in the east. **High Altitude Forest**, **Medium Altitude Moist Evergreen Forest**, **Medium Altitude Moist Semi-Deciduous Forest**, and **Swamp Forest** vegetation types occupy small areas, located mostly in and just to the east of the Albertine Rift and around Mt. Elgon. They provide habitat for much of Uganda’s most globally significant, rare, and threatened plant and animal species (Plumptre, pers comm 2010). Ten vegetation types are low-density woodlands and savanna: **Woodland**; **Forest/Savannah Mosaic**; **Tree and Shrub Steppe**; **Moist Acacia Savannah**; **Moist Combretum Savannah**; **Butyrospemum Savannah**; **Palm Savannah**; **Dry Combretum Savannah**; **Dry Acacia Savannah**; and **Grass Steppe**. Some of them cover large areas in central and northern Uganda. **Bushland**, **Moist Thicket**, and **Dry Thicket** vegetation occurs mostly in eastern Uganda. Poor drainage characterizes the **Sites with Impeded Drainage** and **Swamp**. **Open Water** covers 15.3% of Uganda and includes Lake Victoria, the second largest fresh water lake in the world, Lake Kyoga, Lake Albert, Lake Edward and Lake George and over 160 smaller lakes, the Nile River, and other water bodies. **Post-Cultivation Communities** and **Areas under Cultivation** are associated with prior or current human cultivation of the land and predominate in central Uganda.

Figure 1: Uganda's Vegetation Types



Source: (NEMA, 2009)

I.1.2 SPECIES BIODIVERSITY

Uganda's species biodiversity is extremely important globally because it is so diverse, it includes some species that are endemic to Uganda and many that are endemic to the Albertine Rift Region, and species that are considered globally threatened. Table 1 summarizes the estimates for the total number of species, the percent this represents of global number of species, and number of globally threatened species in 15 groups of plants and animals. The table indicates that 9,706 species of plants and animals have been identified in Uganda. Some taxon have a particularly high number of species: birds (1,012); flowering plants (4,500); butterflies (1,242); mammals (345); and reptiles (142). More species of primates inhabit Uganda than any other country in Africa – there are 13 species in Kibale National Park alone. Uganda has 4.6% of the dragonfly, 6.8% of the butterfly, 7.5% of the mammal, and 10.2% of the bird species that have been identified globally. As more field investigations are made and taxonomic research done, the number of species in most of the taxonomic groups for Uganda will probably increase.

Table 1. Recorded flora and faunal species in Uganda

| Taxon | Total No of Species | % of Global Species | Globally Threatened Species |
|---------------------|---------------------|---------------------|-----------------------------|
| Amphibians | 86 | 1.7 | 10 |
| Birds | 1012 | 10.2 | 15 |
| Butterflies | 1,242 | 6.8 | Nd |
| Dragonflies | 249 | 4.6 | Nd |
| Ferns | 386 | 3.2 | Nd |
| Fish | 501 | 2.0 | 49 |
| Flowering Plants | 4,500 | 1.1 | 40 |
| Fungi (polypore) | 173 | 16 | Nd |
| Liverworts | 275 | 46 | Nd |
| Mammals | 345 | 7.5 | 25 |
| Molluscs | 257 | 0.6 | 10 |
| Mosses | 445 | 3.5 | Nd |
| Reptiles | 142 | 1.9 | 1 |
| Termites | 93 | 3.4 | Nd |
| Other Invertebrates | - | Nd | 17 |
| Total | 9,706 | -nd | 167 |

Source: NEMA 2007; no data: nd

Mammals endemic to Uganda are the moon shrew (*Crocidura selina*), Ankole mole-rat (*Tachyoryctes ankoliae*), Issel's groove-toothed swamp rat (*Pelomys isseli*), and montane shaggy rat (*Dasymys montanus*) (Wilson & Reeder, 2005). Only one bird species is endemic to Uganda, the Fox's weaver (*Ploceus spekeoides*) (Dickinson, 2003). The only reptile species endemic to Uganda is the acuminate bush viper (*Atheris acuminata*) (EMBL Reptile Database, 2005). Amphibian species endemic to Uganda are the Lake Victoria toad *Bufo vittatus*; Roux's puddle frog (*Phrynobatrachus rouxi*); and Uganda clawed frog *Xenopus ruwenzoriensis*. Uganda has 34 endemic freshwater fish species. The only endemic vascular plant genus is *Distylodon* in the orchid family (Mabberley, 2002).

Three regions of Uganda have particularly important biodiversity. **Western Uganda** forms part of the Albertine Rift Region, which is one of Africa's most important regions for biodiversity (MacArthur Foundation, 2001). About half of the entire population of the mountain gorilla (*Gorilla gorilla berengei*) lives in the extreme southwestern part of this region; Lakes George and Edward have 79 species of fish,

a high number for these relatively small lakes. Three of these species are endemic to Uganda (*Varicorhinus ruwenzori*, *Microcteroipoma damasi* and *Hypsopanchax modestus*) (NEMA, 2009). An endemic species of papyrus (*Chloropeta gracilirrostris*) grows in the shallower parts of Lakes Edward, George, and Bunyonyi. In the **Southern Central Region**, Lake Victoria, the lakes of the Kyoga basin, and Sango Bay originally had more than 600 endemic haplochromine cichlids; they also have important biodiversity that due to the island nature is extremely fragile. This gives the southern portion of Central Uganda its particular importance for biodiversity (NEMA, 2009). **Northeastern Uganda** is important for biodiversity because a number of species occur only there and in nearby areas of Kenya and Southern Sudan. These species include 30 species of birds, among which are the Karamoja Apalis (*Apalis karamojae*), a threatened species, and several species of butterflies, including *Papilio nobilis* and *Charaxes smaragdilis elgonae*, the cheetah (*Acinonyx jubatus*), lesser kudu (*Tragalaphus imberbis*), greater kudu (*Tragalaphus strapsiceros*), roan antelope (*Hippotragus equines*), Secretary bird (*Sagittarius serpentaris*) and ostrich (*Struthio camelus*).

Table 2 shows the conservation status of some plants and animals in Uganda as of 2007. Thirty-four animals had gone extinct, four animals had gone extinct in the wild, 27 animals and three plants were critically endangered, 31 animals and four plants were endangered and 72 animals and 33 plants were vulnerable.

Table 2. Conservation status of some plants and animals in Uganda as of 2007

| Conservation Status | Taxon | |
|-----------------------------------|--------|---------|
| | Plants | Animals |
| Extinct | 0 | 34 |
| Extinct in the Wild | 0 | 4 |
| Critically Endangered | 3 | 27 |
| Endangered | 4 | 31 |
| Vulnerable | 33 | 72 |
| Lower Risk/Conservation Dependent | 1 | 18 |
| Near Threatned | 8 | 64 |
| Data Deficient | 1 | 41 |
| Least Concerned | 10 | 1,562 |

Source (NEMA 2007)

Of Uganda's 345 species of mammals, 13 species are considered vulnerable, including four primates: the chimpanzee (*Pan troglodytes*), crested mangabey (*Lophocebus galeritus*), L'Hoest's hamlyn (*Cercopithecus L'Hoestii*), and the red colobus monkey (*Procolobus badius*). Other vulnerable mammals are the Carruther's mountain squirrel (*Funisciurus carruthersi*), cheetah (*Acinonyx jubatus*), and elephant (*Loxodonta africana*) (NEMA, 2007). Although the population of mountain gorillas (*Gorilla beringei*) in Bwindi Impenetrable National Park (BINP) increased from 320 in 2002 to approximately 340 in 2006, it remains an extremely vulnerable species, particularly from the introduction of disease (Plumptre, pers comm 2010).

Table 3 summarizes the population trends of some of Uganda's medium and large grazing animals between the 1960s and 2006. In general it indicates that the populations of many of these grazing animals increased during that period. More recent data at a national level is not available.

Table 3. Status of Uganda's populations of medium and large grazing mammals (1960s-2006)

| Species | 1960s | 1982-83 | 1995-96 | 1999-2003 | 2004-06 | Population Trend |
|----------------------|--------|---------|---------|-----------|---------|------------------|
| Uganda kob | 20,000 | 40,000 | 30,000 | 44,000 | n.d. | Increasing |
| Buffalo | 60,000 | 5,000 | 18,000 | 1,800 | 30,308 | Increasing |
| Elephant | 30,000 | 2,000 | 1,900 | 2,400 | 4,322 | Increasing |
| Hippopotamus | 26,000 | 13,000 | 4,500 | 5,300 | 7,542 | Increasing |
| Hartebeest | 15,000 | 18,000 | 2,500 | 3,400 | 4,439 | Increasing |
| Topi | 15,000 | 6,000 | 600 | 450 | 1,669 | Increasing |
| Impala | 12,000 | 19,000 | 6,000 | 3,000 | 4,705 | Increasing |
| Waterbuck | 10,000 | 8,000 | 3,500 | 6,000 | 6,493 | Increasing |
| Buchellis Zebra | 10,000 | 5,500 | 3,260 | 2,800 | 6,062 | Increasing |
| Eland | 4,500 | 1,500 | 500 | 450 | 309 | Decreasing |
| Rothschild's Giraffe | 2,500 | 350 | 250 | 240 | 259 | Stable |
| Bright's gazelle | 1,000 | 1,400 | 100 | 50 | 0 | Extinct |
| Roan antelope | 700 | 300 | 15 | 7 | 0 | Extinct |
| Oryx | 2,000 | 150 | 0 | 0 | 0 | Extinct |
| Black Rhino | 400 | 150 | 0 | 0 | 0 | Extinct |
| Derby's Eland | 300 | 0 | 0 | 0 | 0 | Extinct |

Source: UWA 2000, Rwetsiba and Wanyama 2006 in NEMA, 2009

Annex G, however, provides tables that show trends in animal populations in some of Uganda's national parks, forest reserves, and wildlife reserves, including the Queen Elizabeth Protected Area (QEPA) from 1988 to 2006, the Murchison Falls Conservation Area (MFCA) from 1973 to 2010, the Lake Mburo Conservation Area (LMCA) between 1992 and 2010 and the Kidepo Valley Conservation Area (KVCA) between 1967 and 2005. The elephant population in KVCA, for example was about 600 in 1972 and is now 454, while in the QEPA the elephant population has grown from 400 in 1988 to 2,959 in 2006 and in Murchison Falls National Park (MFNP) the elephant population decreased from 12,000 prior to 1973 to 308, in 1991 reached a low of 308 and by March 2010 had grown to 904. The population of Rothschild's giraffe (*Giraffa camelopardalis rothschildi*) is of particular interest because it is low enough to be considered on the brink of extinction in Uganda. The tables indicate that in 1972 the population of Rothschild's giraffe in KVCA was 400 but that in 2005 it had decreased to only 14. Its population is not indicated in the tables of Annex G for any of the other PAs, although Table 3, above, taken from a 2009 UWA report, indicates a total population in Uganda of 259 Rothschild's giraffes. The Rothschild's giraffe recently has been added to the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species, because there are fewer than 670 individuals remaining in genetically isolated patches in Kenya and Uganda (www.arkive.org, 2010). According to the table in Annex G, in 2002, the population of chimpanzees was between 4,000 and 5,700; the tables provide no more recent data on chimpanzee populations and do not provide a basis for establishing a trend in their population levels, either at the national level or at the level of the PAs where they occur. As of February 2011, UWA had collected data on animal populations and status in 2009/10, but the data were still being tabulated and analyzed (Broekhuis, J. email 2011), and were unavailable for use in the ETOA.

1.1.3 ECONOMIC VALUE OF UGANDA'S BIODIVERSITY

Estimates from 1999 put the gross economic output attributable to biological resource use in the fisheries, forestry, tourism, agriculture, and energy sectors at US\$ 546.6 million a year and indirect value

associated with ecosystem services, such as the provision of clean water, pollination of crops, prevention of soil erosion, and nutrient cycling at over US\$ 200 million annually (Emerton and Muramira, 1999). Moyini et al. (2002 in NEMA, 2009) calculated the economic value of just one forested watershed to be US \$13.2 million per year. Given the growth of the Ugandan economy since then, the contribution of biodiversity to Uganda's economy probably has also grown. For example, the foreign exchange earnings from tourism rose from US \$113 million in 2000 to over US \$400 million in 2007 (NEMA, 2009). Between 2000 and 2008, 20% of the park entrance fees produced US\$1.8 million (UWA, 2008). As part of Uganda's revenue sharing program, of the US\$1.8 million total, \$1.2 million has so far been disbursed to construct roads, health clinics, schools, and water supply infrastructure in nearby communities (NEMA, 2009). The contribution to cash incomes from forests to communities around forest reserves has been estimated to be between 11-27% (Glenn Bush, 2004 in NEMA 2009). Uganda produces over 300,000 metric tonnes a year of fish, with a value of about US\$120 million per year (<http://www.ugandainvest.com/fishing>, no date). Forest products remain important to Uganda's economy, especially because firewood and charcoal supply a large part of its energy for cooking.

I.2 FOREST BIODIVERSITY

I.2.1 DESCRIPTION OF FOREST TYPES

The term *forest* refers to a type of vegetation dominated by trees most of which at maturity are more than five meters tall and establishes a minimum tree canopy cover of 30% ([National Forestry Authority, 2008](#)). There are 4.9 million hectares of natural forests and woodlands in Uganda, which cover 24% of the land area (NEMA, 2002). Eighty-one per cent (3,974,000 ha) of this is woodland, 19% (924,000) is tropical high forest and less than 1% (35,000 ha) is forest plantations (NFA, 2008).

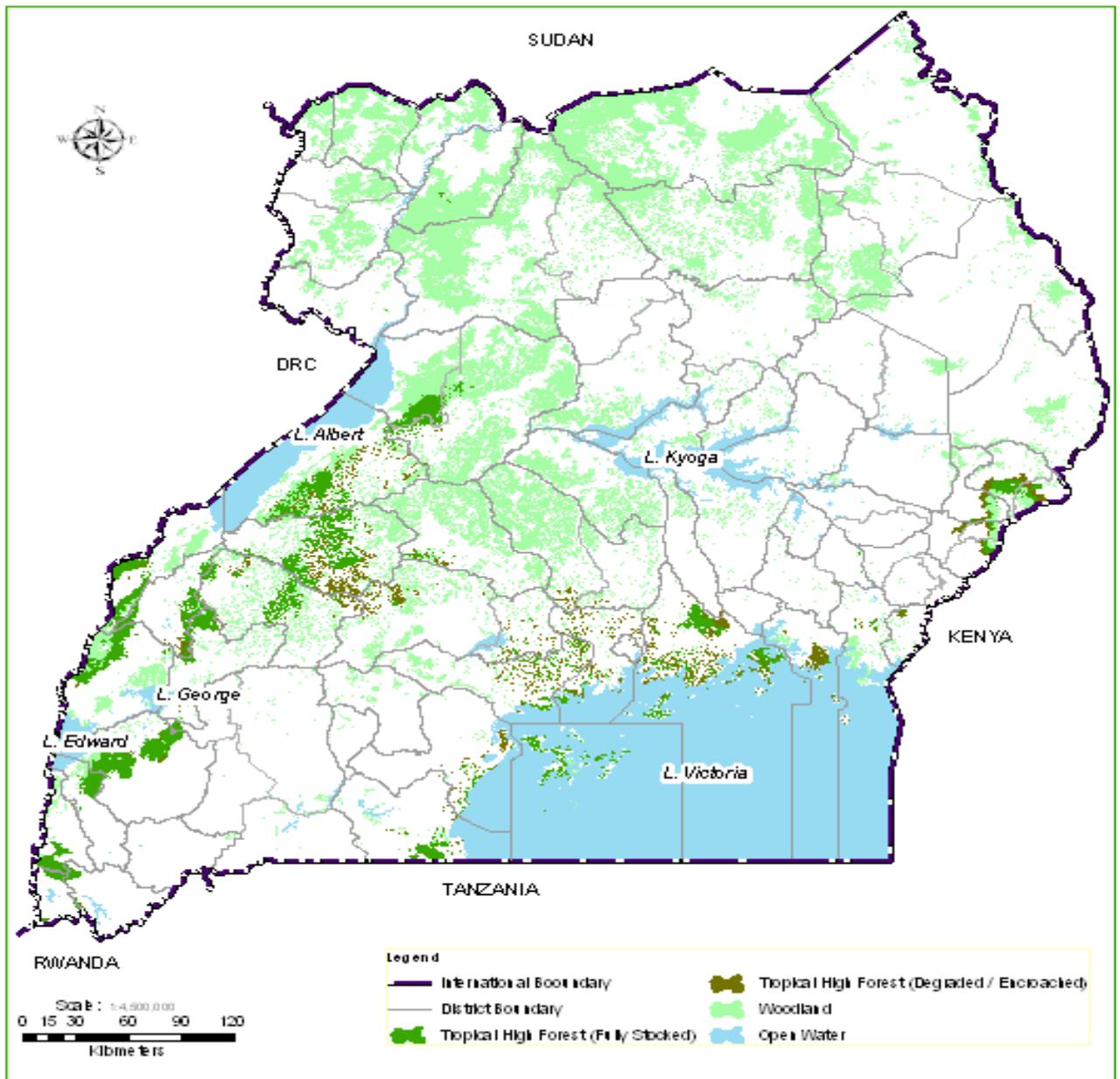
Forests in Uganda (see Figure 2) are broadly categorized as:

- High Altitude Forest
- Medium Altitude Moist Evergreen Forest
- Medium Altitude Moist Semi-Deciduous Forest
- Swamp Forest
- Savannah Forest

The **medium altitude moist-evergreen forest** is structurally complex and rich in species including many lianas, epiphytes, and large trees ([Howard, 1991](#)). The **medium altitude – moist-semi-deciduous forests** are found in areas where the dry season is longer and more severe. The **high altitude forest** occurs above 1,500 m and tends to be less species rich than those found at lower altitudes; it has a broken and irregular canopy characterized by trees of low stature. Budongo forest in western Uganda is classified as a medium altitude-moist semi-deciduous forest; Bwindi-Mgahinga forest and forests in Mount Rwenzori National Park in southwestern Uganda as high altitude ever-green forest and afro-montane forests, respectively; while Kasyoha-Kitomi and forests of KNP in southwestern and western Uganda, respectively, are medium altitude-moist evergreen forest.

Other forest types include **savannah ecosystems** that are found in the relatively flat areas of the country. They are basically woodlands, comprised of forest savannah mosaic that includes a mix of **Moist Acacia Savannah**, **Moist Combretum Savannah**, **Butyrospemum Savannah**, and **Palm Savannah** that are common in Northern Uganda; and **Dry Combretum Savannah** and **Dry Acacia Savannah** found within the cattle corridor stretching from the southwest to northeast of the country and tree and shrub steppe.

Figure 2: Forest Cover Map (Uganda natural forest cover in 2005).



Source: National Biomass Unit

Well-stocked tropical high forests (THF) are mainly in the western part of the country (Bugoma, Budongo, Kibale, Rwenzori Mountains, Kalinzu-Maramagambo, Katsyoha-Kitomi, Bwindi Impenetrable and Mgahinga National Parks) and in the east around Mt. Elgon (Namirembe, 2010). Low-stocked THFs are around the shores and on the islands of Lake Victoria while woodlands are in the northern, central, and western regions. The eastern part of the country is mostly forest-poor a situation that is attributable to the high population density that has placed enormous pressure on tree resources mainly for construction and energy. Table 4 shows the distribution of forests in Uganda.

Figure 2, which dates from 2005 has the most up to date data available on forest cover. The National Forest Authority (NFA) mapping section has not received funding for a subsequent National Biomass Study that was planned to be carried out in 2010. According to the NFA, the demand for forest products has increased since 2005 and coupled with increasing demand to open up forest land for agriculture, enormous pressure has been placed on forest resources; it is therefore believed by NFA staff, as stated in interviews the ETOA team held, that forests have been reduced since the 2005 figures and map were established.

According to Environmental Alert (2008) in northern Uganda, there had been a net gain in vegetation cover when the majority of people were in IDP camps; however, with the return of peace to the region in the last five years, IDPs returned to their homes, and this was accompanied by opening up land for agriculture. The extent of woodland in northern Uganda has been dramatically reduced. There are no accurate up-to-date data available on the amount of reduction in woodland in northern Uganda due to the return of IDPs. The observations of the ETOA team along the road to the north of Murchison Falls National Park between Gulu and Nebbi clearly indicated widespread clearing of the brush and forest that had grown up during 1990s when this area had been abandoned because of the fighting – the clearing is due to the return to of the IDPs since 2006.

Table 4. Geographical distribution of natural forests in Uganda

| Forest type | Extent in 2005 (ha) | Districts with > 20,000 ha of forest |
|---|---------------------|---|
| Tropical high forests, well stocked | 600,956.81 | <u>WEST</u> : Kyenjojo (84,000), Bushenyi (68,231), Hoima (58,889), Kibaale (58,268), Kasese (49,794), Bundibugyo (45,612), Kabarole (39,177), Masindi (31,933), Kamwenge (26,769) <u>CENTRAL</u> : Mukono (63,977), Mpigi (27,170), Kalangala (21,079) |
| Tropical high forests, Low stocked ¹ | 191,694.36 | |
| Woodland | 2,777,997.8 | <u>NORTH</u> : Abim, Adjumani, Amuru, Apac, Arua, Gulu, Kitgum, Kotido, Moroto, Moyo, Nakapiripirit, Nebi, Pader, Yumbe <u>WEST</u> : Bundibugyo, Bushenyi Hoima, Kabarole, Kamwenge, Kasese, Kiruhura, Kyenjojo, Masindi <u>CENTRAL</u> : Kayunga, Kiboga, Mubende, Nakaseke, Nakasongola, |

Source: NFA, 2009

I.2.2 DESCRIPTION OF MANAGEMENT STATUS

Over 1,900,000 ha of the forest area is protected under the Permanent Forest Estate (PFE), defined in the Forestry Policy, 2001 as “land set aside for forestry activities in perpetuity.” The PFE represents about 9% of the total land area of Uganda (Uganda Forestry Policy, 2001); it has been set aside to ensure sustainable availability of forest resources for the people of Uganda including conserving biodiversity and protecting steep slopes, water catchments, riverbanks, lakeshores, and wetlands. The PFE is held in trust for the people of Uganda by the Government in the form of central forest reserves (CFRs)

¹ The low stocked tropical high forest reflects what is left of previously well stocked tropical high forest that has been degraded to a level that has outmatched its regeneration capacity.

managed by the NFA (1,270,797 ha) and the UWA (731,000 ha), and local forest reserves (LFRs) managed by district governments (4,997 ha). Within the PFE, currently 78% (1,468,000 ha) is under forests and woodland, while the rest is mainly grassland (Kayanja and Byaruhanga, 2001). The rest of the forested area (almost 64% of the total forest cover), which is mostly woodland (Kayanja and Byaruhanga, 2001), is under private ownership (State of the Environment Report 2004/5). This – in forests in private ownership – is where deforestation and forest degradation mainly occur (Plumptre, pers comm 2011).

CFRs and LFRs are forests that are managed for conservation and production services. The CFRs are managed for multiple uses using the principal of zonification that was developed by UNESCO's Man and Biosphere (MAB) programme in the mid-1980s. This principle takes into account the fact that PAs that are alienated from people are doomed to failure and only by gaining their support and by sharing the benefits and responsibilities of management, could PAs be expected to survive and satisfy their conservation and development objectives (Nature Conservation Master Plan, 2002). Following the concept developed by the MAB program, management of CFRs is done by maintaining a totally protected central "core" area, with zones of increasingly intensive use permitted closer to the external reserve boundaries. Thus, 20% of the reserve is demarcated as a totally protected "Nature Reserve," 30% as a protection "buffer" zone where low-impact uses are permitted, and 50% as a "production" zone for the sustained production of timber and other forest products (Nature Conservation Master Plan, 2002). Each CFR and LFR is managed according to a Forest Management Plan. CFR management plans are prepared by NFA and LFR Management Plans by the FSSD (under the Farm Income Enhancement and Forest Conservation Program (FIEFOC) that is funded by African Development Bank). According to NFA, communities are allowed to access resources in the CFRs through Collaborative Forest Management (CFM) agreements. Currently out of 85 applications that have been received from community groups, 26 CFM agreements have been signed.

I.2.3 ECONOMIC POTENTIAL OF FORESTS

Statistics prior to 2005 indicated that the forest sector of Uganda's economy was contributing about 2 % of the Gross Domestic Product (GDP) (National Forest Plan, 2005). This figure is calculated from the value of wood production at the "forest gate" – without value addition. Wood processing, transport, and trade are important economic activities in the forest sector, and constitute much of the value in the sector, yet this value in official statistics is accounted for in the GDP contribution of the Manufacturing, Transport & Communications and Wholesale & Retail Trade sectors. Furthermore, the figure does not properly reflect the true economic value of the sector since many forest products and services that are important to the livelihoods of the rural poor, a group whose welfare is a major object of public policy, have little weight in organized commodity markets (National Forest Plan, 2002).

Environmental benefits from forests and trees include protection of watersheds, improvement of soil fertility thereby increasing crop yields, improving micro-climates, carbon sequestration, and acting as a repository of biodiversity of national and international importance. Many of these services are not valued in the market. However, initiatives such as Reduction of Deforestation and Forest Degradation (REDD plus) and Payment for Ecosystem Services (PES) that are currently being run by NFA and ECOTRUST respectively, will help in market valuation of environmental services that have hitherto been ignored.

Recent reviews of the contribution of the forest sector estimate that more than 70% of wood consumption in Uganda is in the informal (non-monetized) sector,² which alone is valued at about 2.75% of GDP (National Forest Plan, 2002). Including the informal sector and a modest estimate of the

²The non monetized sector includes goods and services obtained primarily for domestic use such as firewood, water, medicinal plants, edible flora and fauna, building materials etc.

value of environmental services provided by forests, the forest sector contributes about 6% to GDP. Major contributors to this are domestic fuelwood (Uganda shillings [Ushs] 120 billion), charcoal production (UShs 70 billion), non-wood forest products (UShs 66 billion), commercial fuelwood (UShs 43 billion), and sawn timber (UShs 40 billion). Timber, commonly thought of as the major value of the forest sector, is certainly not the main contributor to the sector's GDP. Another UShs 330 billion may also be added as environmental benefits of the country's forests – derived from ecosystem services mentioned above (National Forest Plan, 2002).

According to NFA, fuelwood shortages are now being witnessed in some parts of the country and this has affected the vulnerable people in society – especially women and children – who have to walk longer and longer distances to collect firewood. Over 90% of Ugandans use fuelwood as their main or only source of energy. Additionally, forests provide safety nets against shortages of food, fuel, income, and against ill health while cultural and spiritual values of forests enhance social capital and a sense of well-being. Studies around some of the protected forests have shown that a large proportion of the population depends on forest resources in some way, and many people from two or even three parishes away from these areas use the resources.

1.2.4 FOREST COVER AND LOSS

In 2005 the NFA measured Uganda's total forest area as 3,570,643 ha – including tropical forest, swamp forest, and savannah forest compared to 4,900,000 ha in 1990. The annual rate of forest loss between 1990 and 2005 had been 88,638 hectares per year with approximately 0.7% (7,000 ha/y) of the forest loss occurring within the PAs and 2.27% outside of PAs.

The 2006 USAID Biodiversity and Tropical Forest Assessment put the tropical forest portion of Uganda's entire forest area in the early 2000s at 924, 208 ha, which is 4% of the country's total area. The NFA, however, estimates the tropical forest cover had declined to 792, 651 hectares by 2005 – within a period of less than five years – giving a percentage decline of 14.2%. Although up-to-date data on the current status of tropical forests in Uganda are unavailable, as mentioned, indications made by NFA's Senior Technical Staff indicate that tropical forests have declined further, largely due to the rapid increase in population that has placed a bigger demand on forest resources. Table 5 shows the districts with the largest forest area lost between 1990 and 2005. Loss of tropical high forests (in hectares) occurred mainly in Kibaale (52,745), Mukono (36,649), Wakiso (24,679), Hoima (16,254) and Mayuge (14,711).

Table 5 Highest loss of total forest area by District (1990-2005)

| District | Area lost (ha) | % loss |
|-------------|----------------|--------|
| Kitgum | 297,147 | 63 |
| Kiboga | 87,131 | 52 |
| Amuru | 81,406 | 21 |
| Kibaale | 80,585 | 43 |
| Nakasongola | 63,127 | 49 |
| Hoima | 62,250 | 39 |
| Kamuli | 19,998 | 81 |
| Bugiri | 20,297 | 76 |

I.3 WETLANDS AND WATER RESOURCES

I.3.1 DESCRIPTION OF WETLANDS AND WATER RESOURCES

Uganda's National Policy for the Conservation and Management of Wetland Resources (1995) defines wetlands as areas "where plants and animals have become adapted to temporary or permanent flooding." Wetlands in Uganda cover approximately 30,000 sq. km. which is approximately 13% of the total area of the country. Eleven wetlands have been declared Ramsar sites in Uganda³ covering a total area of 307,756 hectares (about 10.3% of the total wetland area). They include permanently flooded areas with papyrus or grass swamps, swamp forests or high altitude mountain bogs, as well as seasonal floodplains and grasslands (WMD/NU, 2008). Most of these wetlands occur within major wetland drainage systems: the basins of Victoria (69,000 km²), Kyoga (2,046 km²), Albert (5,500 km²), Edward (2,201 km²), and George (246 km²). The lakes in these basins cover an area of 77,918 km², although their trans-boundary nature means that only 35,578 km² lie within Ugandan territory (WMD/NU, 2008). Lake Victoria is shared with Tanzania and Kenya, reducing the Uganda area to 29,000 km², while the western sections of Lakes Albert and Edward lie in the DRC. The portion of these lakes that lie in Uganda are 2,911 km² and 645 km², respectively (WMD/NU, 2008).

The following categorization of Uganda's wetland types is broadly accepted:

- Swamp forest: comprised of continuous stands of trees and palms at least 10 meters in height with crowns interlocking, understory is usually sparse except where the canopy is more open.
- Papyrus swamps usually have more than 50% of the area dominated by dense papyrus cover.
- Reeds and sedges: comprised of a herbaceous layer of reeds and sedges, occasionally with grasses and forbs; woody species, if present are scattered or grouped with sparse canopy cover.

I.3.2 DESCRIPTION OF MANAGEMENT STATUS

The wide distribution of wetlands and the lack of protective mechanisms mean that a large proportion of the population has access to wetlands; this results in extensive degradation. The situation demands their efficient management and sustainable utilization (Ministry of Natural Resources, 1995). In Uganda, there are no recent, reliable countrywide statistics on changes in wetland area – the latest national land cover map with detailed wetland information was produced in 1996 (NFA, 1996). However, Uganda's recent State of the Environment Report indicates a reduction in wetlands, mostly due to conversion to cropland (Iganga District and southwestern Uganda) and the spread of urban settlements (see Table 6), as in Kampala (NEMA, 2007).

³ The 11 Ramsar sites are Lake Bisina Wetland System (Ramsar site No. 1633); Lake Mburo-Nakivali Wetland System (Ramsar site No. 1634); Lake Nakuwa Wetland System (Ramsar site No. 1635); Lake Opeta Wetland System (Ramsar site No. 1636); Lutembe Bay Wetland System (Ramsar site No. 1637); Mabamba Bay Wetland System (Ramsar site No. 1638); Murchison Falls-Albert Delta Wetland System (Ramsar site No. 1640); Nabajjuzi Wetland System; Sano Bay-Musambwa Island-Kagera Wetland System; Lake George Ramsar Site and Lake Nabugabo Wetland System.

**Table 6. Main Wetland Uses as Inventoried in
Uganda's National Wetland Information System (1997 – 2001).**

| Use | Percentage Share of Uganda's Wetlands | Ranking (1 – highest; 14 lowest) |
|--|--|---|
| Human settlement | 12 | 1 |
| Mineral extraction | 31 | 2 |
| Plantation tree cultivation and harvesting | 16 | 3 |
| Cultivation of food and fiber | 37 | 4 |
| Natural tree harvesting | 73 | 5 |
| Natural herbaceous vegetation harvesting | 57 | 6 |
| Livestock grazing | 72 | 7 |
| Hunting | 42 | 8 |
| Fishing | 35 | 9 |
| Wastewater treatment | 0.8 | 10 |
| Water collection and use | 80 | 11 |
| Beekeeping | 11 | 12 |
| Tourism | 0.5 | 13 |
| No use | 4 | 14 |

Source: National Wetlands Information System

Ranking Criteria: based on increasing potential to undermine the capacity of a wetland to provide its ecosystem services

Wetland conversion is associated with social costs primarily due to reduced or total loss of hydrological functions, and environmental costs related to habitat loss and loss of other ecosystem services (WMD *et al* 2009) as presented in Annex H.

One of the factors driving these conversions is that the immediate economic returns to individuals outweigh the costs to the wider society associated with the loss of important ecosystem benefits. However, in most cases, the economic costs are not fully accounted for because some ecosystem services – mostly regulating services such as ground water recharge, water purification, waste treatment, or flood control – are not factored into conventional economic analysis and are instead considered as non-monetary bounties of nature that are “free-of-charge” (WMD *et al*, 2009).

The Government of Uganda (GOU) is attempting to improve the monitoring of wetlands. The responsible body for the management and monitoring of wetlands has been scaled up from the previous Wetlands Inspection Division to a fully fledged department (the Wetlands Management Department). The WMD has developed a National Wetlands Information System – based on a standardized inventory of wetlands carried out for approximately 5,000 wetland sample points between 1997 and 2001 – that contains detailed data on different wetland uses, the level of use, and the impact of these uses on wetland systems (WMD *et al*, 2009). As stated by the WMD, the main challenge now is to make this information accessible to the districts to enable regular updates at district level. Information from the districts will help in analyzing trends in wetland degradation thereby enabling prescriptions of appropriate actions on the one hand, while also inputting into the National Wetlands Information System from which an overall national picture of the status of wetlands could be derived to guide planning. This ties in well with the current move by local governments to appoint Wetland Officers to relieve District Environmental Officers (DEOs) of this responsibility.

1.3.3 ECONOMIC POTENTIAL OF WETLANDS AND WATER RESOURCES

Wetlands in Uganda are often referred to as the country's "granaries for water" because of the water storage and purification roles they play. Additionally, Uganda's wetlands provide people with drinking water, construction material, and fuel, farmland, fish, and pasture for their cattle (WMD *et al*, 2009). Wetlands supply direct or subsistence employment for 2.7 million people, almost 10% of Uganda's population. In many parts of Uganda, wetland products and services are the sole source of livelihoods and the main safety net for the poorest households (WMD *et al*, 2009). However, the wetland resources provide this employment through a combination of sustainable means, for example fishing and craft making, and unsustainable means, for example sand mining and agriculture. Sustainable management of wetlands is therefore a vital strategy for poverty reduction in Uganda.

Conservative economic valuation estimates put the direct productive value of wetlands at US\$300-600 per hectare, while including a broader set of non-marketed regulating services, such as water purification and carbon sequestration, suggest a per hectare value as high as US\$10,000 per hectare (MFPED, 2004). This represents an enormous economic potential (US\$30 billion) given that the total wetland area currently being used is 30,000 square kilometers⁴ or 3,000,000 hectares. Unfortunately, despite their high economic value, wetlands are not yet managed as environmental capital, worthy of protection and investment (WMD *et al*, 2009).

Uganda's wetlands also provide globally important ecological benefits. They are home to globally endangered species such as the Shoebill (*Balaeniceps rex*) and Fox's weaver (*Ploceus spekeoides*), and fish species of the Cichlidae family (WMD *et al*, 2009). According to the WMD, the economic importance of wetlands transcends the water sector to other sectors of Uganda's economy such as fisheries, given that many fish are dependent on wetlands for feeding and breeding, and tourism, since a variety of bird and animal species are dependent on wetlands for their survival. The agriculture sector is also largely supported by wetland resources especially in eastern Uganda where extensive patches of wetlands are being exploited for rice growing, in addition to food crops such as yams. Other important functions of wetlands are summarized in Annex H.

1.4 OTHER CRITICAL BIODIVERSITY RESOURCES

Although the Wildlife Systems Plan of 2001 provided for representative ecosystems in the PAs, there remain several critical biodiversity conservation areas on private land, agricultural land, and wetlands/lakeshores that face serious threats due to continued land use change practices (in part related to population pressure) and illegal hunting. From meetings with interviewees and from internal ETOA team discussions, as well as from the ETOA SOW (which notes agricultural biodiversity and watersheds), the following critical biodiversity resources have been identified and are briefly described below.

1.4.1 THE KAFU BASIN

The Kafu Basin is located in central Uganda and covers the districts of Nakasongola, Luwero, Masindi, Nakaseke, Kiboga, and Hoima. There are several patches of private forests and large chunks of fallow land that provide natural habitat to a diversity of animals and plant life including Sitatunga (*Tragelaphus spekeii*), hippopotamus (*Hippopotamus amphibious*), buffalo (*Syncerus caffer*), bushbuck (*Tragelaphus sylvaticus*), bushpig (*Potamochoerus larvatus*), chimpanzee (*Pan troglodytes*), leopard (*Panthera pardus*), Nile crocodile (*Crocodylus niloticus*), waterbuck (*Kobus ellipsiprymnus*), and several bird species, according to <http://www.birdlife.org/datazone>, including the migratory little egret (*Egretta garzetta*); grey-headed gull

⁴ According to the Commissioner Wetlands Management Department, Uganda's total wetland area should have been 16%, representing an actual area of 36,000 square kilometers but recent surveys have shown a reduction in area to about 13% representing an actual extent of 30,000 square kilometers.

(*Larus cirrocephalus*); grey crowned crane (*Balearica regulorum*); white-winged tern (*Chlidonias leucopterus*); white belied kingfisher (*Alcedo leuconter*); three near threatened bird species – grey parrot (*Psittacus erithacus*), papyrus gonolek (*Laniarus mufumbiri*) and great snipe (*Gallinago media*); and two vulnerable bird species, shoebill stork (*Balaeniceps rex*) and blue swallow (*Hirundo atrocerulea*).

As human population increases and more areas are opened up for settlement and agriculture many of these animals, birds, and plant communities could be destroyed. Poaching during the last decade (2000-2010) has reduced animal populations in these areas, and elephants have been completely removed from this area. UWA receives complaints about crop raiding, mainly by chimpanzees and there have been documented cases of leopard attacks on livestock; even though illegal, livestock keepers will kill leopards that they believe threaten their stock.

This area however provides an opportunity for game ranching and even farming that can be combined with eco-tourism as has already been demonstrated on Ziwa Ranch in Nakasongola district through a private-public partnership arrangement (UWA Strategic Plan, 2007-12).

1.4.2 LAKE VICTORIA SHORES AND ISLANDS

There are extensive wetlands along the Lake Victoria shores that are important for fisheries and Nile crocodile (*Crocodylus niloticus*) conservation. The major threat to these biodiversity areas is habitat reduction through settlements and forest clearance. Crocodiles have been drastically reduced in L. Victoria from an estimated 5,000 in the 1960s to just about 300 in 2009 (UWA, 2010), and they continue to be killed, for example, when they attack fishermen and or when they enter lake shore communities (see Table 7 for an indication of human-crocodile conflicts). An attempt at crocodile farming was made starting in 1994 but this has largely depended on stocks from Murchison falls and therefore has had no real conservation impact on the crocodile population in L. Victoria.

Table 7. Human-Crocodiles conflict recorded in five districts from 1996-2009

| District | Total attacks on humans | Total survivals | Death | % Survival | % Death |
|-------------|-------------------------|-----------------|-------|------------|---------|
| Bugiri | 121 | 23 | 98 | 36.5 | 39.7 |
| Mayuge | 110 | 24 | 86 | 38.1 | 34.8 |
| Busia | 11 | 1 | 10 | 1.6 | 4 |
| Jinja | 13 | 7 | 6 | 11.1 | 2.4 |
| Mukono | 55 | 8 | 47 | 12.7 | 19 |
| Grand Total | 310 | 63 | 247 | 20.3 | 79.7 |

Source Problem Animal Data, UWA 2010

The Sango Bay forest area along the western shores of L. Victoria still harbor viable populations of hippopotamus (*Hippopotamus amphibious*), elephant (*Loxodonta africana*), and buffalo (*Syncerus caffer*), which still suffer from illegal hunting as there is no UWA presence in the area (there are no wildlife PAs)

The biodiversity of the islands in L. Victoria is not very well-documented. Available information indicates that the islands are very important for Sitatunga (*Tragelaphus spekeii*) conservation, which are listed as rare in Uganda. Sitatunga are quite vulnerable to poaching, but also very attractive for sport hunting. The islands also have healthy populations of primates including black and white colobus monkey (*Clobus guereza adolfi-friederici*), Doggett's blue monkey (*Cercopithecus mitis*) and several rodent species such as *Praomys jacksoni*, *Oenomys hypoxanthus*, and *Lophuromys flavopunctatus*, (Oikia, 1992). There is no PA on any of the islands.

I.4.3 AGRICULTURAL BIODIVERSITY

In broad terms biodiversity as defined by the Convention on Biological Diversity (CBD) includes agricultural biodiversity. However, in Uganda agricultural biodiversity has not been much emphasized. Wild coffee in Kibale, Queen Elizabeth, and Bwindi National Parks is an interesting and practical example of the link between wild varieties and agricultural varieties. An unsuccessful attempt (a Global Environment Facility [GEF] supported project) was made to blend wild coffee (*Psychotria nervosa*) with robusta coffee so as to enhance the market value; this was to be sold as “wild” organic coffee. However, the original proposal to GEF had failed to anticipate the need for significant investment in the marketing component; and the project failed to generate sufficient income from the sale of wild coffee blends and for the allocation to community development and biodiversity conservation. Regardless, the project had some notable achievements, among them was the production and certification of the world’s first wild and organic coffee blend.

I.4.4 IMPORTANT WATERSHEDS

The forest ecosystems of Kalangala, Mt. Elgon, Mt. Rwenzori, Mabira, and Bwindi – Mgahinga are very important for water catchment in addition to biodiversity conservation. The forest cover of Bwindi – Mgahinga and Mt. Rwenzori has remained intact and since 2000, encroachment has been completely checked (as noted in UWA annual reports from 2001 to 2009; according to UWA staff interviewed by the ETOA team; and as observed by the ETOA team in many visits to these areas).

Parts of Mabira Forest have been threatened with land conversion for sugar cane and Kalangala has already seen significant conversion for oil palm. Conversion from natural forest to oil palm or sugarcane will reduce the benefits the watershed can provide as far as flood attenuation, erosion control, and clean water supply. Mt. Elgon has suffered repeated encroachment pressure for agriculture, much of it fuelled by politicking. In 2006-2007, water levels of L. Victoria dropped so low that it affected hydro-electricity generation at Owen Falls Dam; this is partly due to massive deforestation of the lakeshores. In 2009 and 2010, areas close to Mt. Elgon and Rwenzori suffered extensive floods and landslides again partly because of decreased forest cover. These environmental signals must be taken seriously and measures that ensure that forest cover in these areas is retained need to be implemented.

I.4.5 OTHER CRITICAL BIODIVERSITY RESOURCES: MANAGEMENT, CONSERVATION, AND POTENTIAL OPPORTUNITIES

The Kafu Basin and Lake Victoria Shores and Islands (Sections 1.4.1 and 1.4.2) have suffered for a long time from indiscriminate killing of wildlife mainly as a means of safeguarding crops and livestock, but also for meat and other animal products. Any animal encountered, be it young, juvenile, female or even a pregnant female can be the victim of indiscriminate killing. Poison (an indiscriminate killer) may be used against predators, and this can exterminate whole families. This is more dangerous than hunting that “discriminates” – where only mature males are killed either for sport or meat or where the animal causing the damage is killed to protect against crop and livestock losses.

However, all forms of hunting are illegal unless specifically permitted by UWA. Collaborative management agreements (see additional discussion in Section 2) on private land in Kalangala, Amuru, and Kafu basin have been implemented and have shown success in conserving wildlife. After piloting sport hunting in areas around Lake Mburo National Park from 2001 to 2009, UWA has expanded the sport hunting program to other areas (both protected and outside PAs) including Kabwoya, Katonga, Pian Upe, East Madi, and Matheniko Bokora Wildlife Reserves and Kafu Basin and Kalangala (L. Victoria) as a management intervention. It is still too early to assess the effectiveness of this intervention in Uganda although experience from southern Africa has shown quite positive results (Namibia, in particular). The challenge for Uganda and UWA, in particular, is to enforce the appropriate regulatory framework, and thereby ensure that illegal off-take does not occur and that illegally killed wildlife does not enter the legal stream.

Another measure UWA has implemented to contain the threats to biodiversity outside PAs (based on the Wildlife Act 2000) is a private-public partnership with a pilot game ranching scheme in partnership with Rhino Fund Uganda. The partnership began in 2001 at Ziwa Ranch, located in the Kafu basin. As of 2011, the Ziwa Ranch holds nine southern white rhinos (*Cretotherium simum simum*) among other wildlife like leopard (*Panthera pardus*), bushback (*Tragelaphus sylvaticus*) and water buck (*Kobus ellipsiprymnus*), and demonstrates that integration of wildlife enterprises with livestock is practical and can be economically viable. Since 2006, the rhino population has increased from four to nine; two were brought in and there were three births.

In the same area since 2005, with support of local NGOs including the Jane Goodall Institute (JGI) and Chimpanzee Wildlife Conservation Trust (CWCT), the chimpanzee populations in the forest remnants are being managed for ecotourism and problem animal control.

2. PROTECTED AREAS AND THEIR STATUS

2.1 TYPES OF PROTECTED AREAS

In Uganda the term “Protected Areas” generally refers to Wildlife Conservation Areas. The agency responsible for management of wildlife in the country is the Uganda Wildlife Authority, established in 1996 by merging the Uganda National Parks Service and the Game Department. In defining the categories of PAs, the Wildlife Policy (1999) and Act (2000) use the blanket term “Wildlife Conservation Areas.” These are areas where wildlife is protected, managed or sustainably utilized. Wildlife Conservation Areas are divided into two categories:

- 1) Wildlife Protected Areas – National Parks and Wildlife Reserves
- 2) Wildlife Management Areas – Community Wildlife Areas and Wildlife Sanctuaries

Table 1 and Map 1 in Annex I provide details of the types and locations of PAs.

2.2 DESCRIPTION OF PROTECTED AREAS

WILDLIFE PROTECTED AREAS

There are 10 National Parks and 12 Wildlife Reserves in Uganda. The law provides for delegation of management authority either wholly or in part and also allows for collaborative management. Delegation of authority is allowed from UWA to districts and involves turning over all authority to local government; whereas collaborative management involves cooperation between UWA and the district, with each institution playing an agreed upon role. The law further allows for creation of local and private Wildlife Reserves by either local government or private land owners; there are none at present (2011).

The purpose of wildlife protected areas is defined by the Wildlife Act (2000) as:

- a) To preserve selected examples of biotic communities of Uganda and their physical environments (for biodiversity conservation).
- b) To protect areas of aesthetic beauty and of special interest (for recreation and scenic viewing).
- c) To preserve populations of rare, endemic, and endangered species of wild plants and animals (as well as scientific research).
- d) To assist in water catchment conservation.
- e) To generate economic benefits from wildlife conservation for the people of Uganda (extractive utilization and other economic activities).

The difference between a National Park and Wildlife Reserve is that commercial extractive utilization – for example, hunting, is permissible in a Wildlife Reserve but not in a National Park (see Annex I for more information on allowable uses in PAs). Nonetheless, extractive industries for non-biological resources such as minerals have been permitted in national parks. Limestone mining in Queen Elizabeth

National Park (QENP) was permitted in 2008 after a thorough environmental impact study. Oil and gas extraction will start in 2012 in Murchison Falls National Park, where on-going exploration confirmed commercial oil deposits inside the park. Whereas, at the time of establishing the National Parks in the 1950s it was envisaged that no extractive industries would be permitted, the new Wildlife Act (2000), section 18, 6 (e), did allow for “any other economic activity.” Other economic activities now on-going in the national parks are hydropower generation in BINP and QENP. More hydropower plants are planned in Rwenzori, Murchison, and Mt. Elgon National Parks. Feasibility studies and environment impact studies for these hydro-power schemes have been completed, and construction may begin in 2012 or 2013.

WILDLIFE MANAGEMENT AREAS

Both the Wildlife Policy and Act recognize that there is wildlife on land that is settled or that is owned privately and that such wildlife should be protected and managed in WMAs. These areas are categorized as:

- *Animal Sanctuaries* are places where wildlife species are protected and human activities that are detrimental to the existence of this wildlife are prohibited or regulated. Examples of these include bird sanctuaries in urban areas in Entebbe, Kampala, and Jinja; and animal sanctuaries in fishing villages in QENP.
- *Community Wildlife Areas* are tracts of land owned by communities, individuals, or public lands that are not gazetted as National Parks or Wildlife Reserves where UWA permits, based on licensing or management agreements, direct utilization of the wildlife resources in accordance with approved management plans, to benefit communities and to mitigate for losses caused by wildlife.

2.3 CURRENT WILDLIFE CONSERVATION IN UGANDA

Most of the Wildlife Reserves were established in the 1920s and 1930s. At that time, the emphasis was on game control against crop, property, and livestock loss (mainly elephant but also buffaloes, hippos, and lions were the object of the control). At that time, biodiversity conservation was not an issue; animals were abundant, the human population was very low, and uninhabited areas were plentiful. Hunting was a key management activity. In the 1940s and 1950s, as agricultural activities expanded control, through hunting, of wild animals intensified and national parks were created to preserve species and landscapes. From the 1950s through the 1980s, national parks were wholly for preservation of wildlife and only tourism activities were legally permitted, although illegal extractive activities such as poaching and timber cutting took place. The civil wars in the 1970s and 1980s caused the breakdown of control over the protected areas and rampant poaching occurred over the whole country. Consequently, wildlife populations fell drastically. The northern white rhino (*Ceratotherium simum cottoni*), eastern black rhino (*Diceros bicornis*), oryx (*Oryx beisa*), Derby's eland (*Tourotragus derbiannus*), and African hunting dog (*Lycan pictus*) went extinct in Uganda.

The change in government in the late 1980s provided an opportunity for review of policies, laws, and structures for environmental management, wetlands, forests, and wildlife. Policies shifted toward conservation approaches. A new wildlife system plan was prepared based on a comprehensive, consultative, participatory, and rationalized approach that also took into account the human population increase and other developments already captured in the new policies and laws. All wildlife conservation areas were reviewed to ensure that they fulfilled the policy and act.

The wildlife conservation areas that are shown on the map in Annex I are representative of the various ecosystems and biodiversity in the country. To date (2011), based on the UWA annual reports (2001 to 2009) and the Strategic Plan (2007-12) as well as the State of the Environment Report (2010), the wildlife

conservation areas are serving the purpose for which they were created and are in accordance with the provisions of the Wildlife Systems Plan.

An external evaluation (Robinson et al, 2008) undertaken for UWA in 2008 showed steady gains in fulfillment of the UWA mandate as articulated in the Act. The period before 2000 was described as “recovery”; between 2001 and 2005 as “systems development” – i.e., when internal operating policies such as human resources, financial management, planning, research, and community relations were put in place; and 2005 onwards as “growth.” Wildlife populations have increased, wildlife and habitat in PAs have been accorded improved protection, many of the PA boundaries have been marked on the ground, collaboration with communities has been enhanced, revenue generation, tourist numbers, and investments in tourism and wildlife have increased, collaborative management agreements from wildlife management both in wildlife reserves like Ajai, Kabwoya, East Madi, Pian Upe, Matheniko Bokora, and Katonga; and on private land in Kalangala, Amuru and Kafu basin have been negotiated and signed (2006 to 2010) and are currently under implementation.

General Management Plans (GMP) for all PAs are in place as shown in the table in Annex I. The plans although developed for only the PAs take into account the whole landscape or ecosystems and social-economic aspects. This approach could further be improved to ensure integration of biodiversity management practices outside PAs as has been done since 2001 for areas neighboring Lake Mburo National Park (Annex J discusses this).

Staffing and equipment in the PAs are generally adequate; equipment in the form of vehicles, uniforms, accommodation, etc. were supplied with help from the World Bank under the Protected Area Management and Sustainable Use (PAMSU) project, but UWA now finances over 80% of operating expenses (inclusive of staff salaries, but exclusive of capital expenses such as vehicles and other equipment and new buildings) from internally generated revenue and needs only 20% of their budget from the Ministry of Finance and development partners, including donors and NGOs to balance the budget. Exclusive of the portion for revenue sharing, UWA is using funds allotted from tourism fees to replenish to cover the operating costs of Uganda’s entire system of national parks and wildlife reserves and for other needs besides capital expenses.

Up to July 2010 UWA was on course in its management of finances, equipment, and human resources in accordance with approved internal policies and guidelines. However, disagreements between the new Board of Trustees appointed in April 2010 and top management created a crisis in governance from August 2010 which continued through the start of 2011. Most donors (World Bank, Norway) and the ETOA team believe this will be resolved by mid-2011 since the Board was disbanded by a High Court Order in November 2010.

Still some areas require more attention by UWA: applied science/research and landscape management, including strengthening data collection, analysis, storage, and application of research to address problem animals and crop raiding especially in Queen Elizabeth, Kibale, Bwindi, and L. Mburo National Parks (these are discussed in Section 5). In addition, habitat management needs greater emphasis, especially where there is increasing bush encroachment such as in Murchison Falls or agricultural encroachment in parks such as Mt. Elgon and areas outside PAs in northern Uganda, Karamoja, Central Uganda, and the Islands in L. Victoria. These gaps are the basis of one of the main “actions needed to conserve biodiversity” in Section 5.

A positive development for wildlife conservation has been the development and implementation of collaborative management agreements (CMA). One example is in areas around L. Mburo, where the collaborative management approach has resulted in increased populations of zebra (*Equus burchelli*) and impala (see Table 3). Another example dates from 1994, where there have been collaborative management arrangements between communities and park authorities in Bwindi and Mgahinga National

Parks. Areas are designated as multiple use zones within the two national parks, where through a Memorandum of Understanding, community members can access renewable resources such as deadwood, firewood, and honey. The relationship has grown between the parks and the communities to the extent that in 2002 communities intercepted Congolese poachers targeting mountain gorillas in BINP even before the communities alerted park authorities about the problem. There have been very few cases of poaching in the two parks (Geo Dutki, pers comm Jan 2011), and this can be attributed to the collaborative management agreements and the benefits derived by the communities.

2.3.1 ECONOMIC POTENTIAL OF PROTECTED AREAS

Besides the environmental and ecological benefits, which are valued at Ug. Shs13 billion per annum (Moyini, et al 2002), there are economic benefits that directly contribute to agricultural production and are difficult to quantify; there is also extractive utilization that is not adequately captured in economic statistics – for example, food, medicine, crafts, and construction materials, all estimated at over US \$1 billion annually (WCS, 2009). The economic contribution of wildlife-based tourism has been reasonably quantified; it has earned Uganda US\$590 million in 2008 (NDP, 2010) and has been growing at an annual average of 22% since 2005. The National Development Plan (2010) lists (wildlife based) tourism as the third highest economic growth sector after agriculture and forestry. Tourism contributed 9.3% of the GDP for Uganda and 7.4% of total employment in the country. Real GDP growth for tourism in 2008 was 4.0% (NDP, 2010).

Although Uganda has many tourism attractions (for example, the rich birdlife, numerous craters and the rift valley, the snow capped Rwenzori mountains, the magnificent Murchison Falls, the Karamoja landscape and savannah big game), about 47% of the tourism revenue comes from the mountain gorillas (i.e., 47% of the \$590 million mentioned above). However, with peace and security in northern Uganda, with the increasing security situation in Karamoja, and the improving infrastructure (hotels and roads – there is a new road to Gulu and new hotels like Pakuba and Apoka in Murchison Falls and Kidepo respectively) there is potential to diversify tourism revenue sources. Uganda should now be able to use its comparative advantage of the “big five savannah game animals” plus the “two apes” and “snow at the equator.”

Tourism has the potential to generate more jobs for Ugandans and earn over US \$1 billion in the next five years (NDP, 2010). The extractive utilization of wildlife resources needs to be properly quantified but it is currently well over US\$1 billion and certainly the ecological and environmental benefits that directly influence the agricultural and industrial aspects of Uganda’s economy must be put in perspective. This would help build an appreciation of Uganda’s biodiversity and would support a more rational resource allocation (i.e., financing from the government budget) for biodiversity conservation.

In an interview, the Minister of State for Tourism, Wildlife and Antiquities, Hon. Serapio Rukundo stated that the Government would like to habituate more gorilla groups for tourism in Bwindi possibly raise habituated groups to about 50% of the population (versus 22%), construct more hotels and lodges in the parks through a public-private partnership arrangement, and fence off parks starting with Lake Mburo and parts of Queen Elizabeth National Park to address problem animal control. These statements reflect the information in the NDP on the tourism sector.

As mentioned, Uganda has other attractions for tourists, and has opportunities to diversify. For example, hunting can provide economic benefits and at the same time, has great potential to support biodiversity conservation. Prior to the 1950s, hunting for meat and for trophies was common. As wildlife numbers reduced due to habitat change and unsustainable harvests, hunting was banned in 1979. With recovery of animal populations especially outside PAs and with the perennial challenge of managing problem animals, Uganda decided to pilot sport hunting from 2001 in areas near L. Mburo National Park. By 2009, results showed that not only was sport hunting helping generate income that

supported community social needs and livelihoods but also that by attaching an economic value, the wildlife attained greater protection from the landowners and there was incentive to stop illegal off-take (Rwetsiba, per comm. Jan 2011). Wildlife numbers in these areas started increasing, particularly impala and zebra.

Between 2005 and 2010, based on the results of the pilots, more areas were set aside as concessions for sport hunting, to private firms in partnership with local government. These concessions (in the form of collaborative management agreements) include Kabwoya, Katonga, Pian Upe, East Madi, and Bokora Wildlife Reserves as well as Kafu basin, Kalangala, and Amuru on private land. The law requires that the management agreements must provide for a flow of financial benefits to local communities to provide an incentive for local people to conserve wildlife. This arrangement has been welcomed by communities and the private sector, although it has encountered opposition from “extreme conservationists” and tourism operators. Experience from other African countries, including Botswana, Namibia, Zambia, and Tanzania, demonstrates that sport hunting can generate substantial financial income for protected areas, create jobs and raise incomes of local people, and help to conserve animal species.

There have been a number of Memoranda of Understanding (MoU) (UWA annual reports 2006 to 2009) signed between communities and UWA to access biological resources, as well as MoUs to guarantee economic benefits to local governments, in the case of sport hunting and other extractive utilization. Concession agreements have also been signed for private-public partnerships in management of some of the wildlife conservation areas. The table in Annex I provides a description by category of the economic activities that are permissible in PAs. The table is derived from provisions in the Wildlife Policy (1999) and Act (2000). As previously mentioned, the challenge Uganda faces is to ensure that there are effective regulatory mechanisms for extractive utilization including sport hunting. Although some guidelines are in place, enforcement and monitoring need to be strengthened.

3. CLIMATE CHANGE: BACKGROUND

In texts and conversation about climate in Uganda, the concept of climate change is often used interchangeably with climate variability. Climate change is based on statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically 30 years and beyond) while climate variability is based on variations in the mean state of the climate on all temporal and spatial scales beyond that of individual weather events (IPCC, 2001). In Uganda, climate change is used interchangeably with climate variability by most agencies and scholars even when adequate scientific climate data over 30 years is unavailable. Currently, most climate-related data (observed changes, trends and projections of rainfall, temperature, precipitation, humidity etc.) available cover a short timeframe. Also, climate modelling studies have not been documented in Uganda. However there is also information pointing to climate change in Uganda, for example the frequency of extreme weather related disasters since the 1950s, receding of the glaciers on Mount Rwenzori, and temperature rise since 1960 (additional information on these can be found in Annex F). Because of this, climate change and climate variability are used inter-changeably in this document.

Commonly observed indications that Uganda is experiencing a warming trend include rising temperatures, changing rainfall patterns, melting glaciers in the Rwenzori mountains, increasing prevalence of agricultural pests and human diseases, and increasing intensity and frequency of dry spells and floods (Oxfam, 2008). *Turning up the Heat*, a report by Oxfam, observed southwest Uganda as the fastest warming region in the country (0.3°C per decade). It also noted that hotter temperatures are likely to reduce outflow of Lake Victoria hence affecting power generation. There were seven droughts between 1991 and 2000 in comparison to only two between 1981 and 1990, three between 1971 and 1980, and none between 1961 and 1970. Additionally, the mean temperature in Uganda has increased by approximately 1.3°C since 1960 – on average 0.28°C per decade – (DWRM, 2010) and the ice cap on the Rwenzori mountains has receded 40% since the 1955 cover (ACCRA, 2010; DWRM, 2010; Hepworth and Goulden, 2008; and Oxfam, 2008).

There are many cases of local knowledge that indicate that Uganda's climate is in a warming trend. For instance, the Advocacy Officer of Climate Action Network Uganda (CAN-U), told the ETOA team that he had experienced a sharp temperature rise while working in Arua district during 1996-2002 and again while working in Kitgum during 2003-2005. In addition to the above observed changes, malaria became prevalent in Kabale District during 2005, whereas previously it was extremely rare. The outbreak of yellow fever in northern Uganda in late 2010 could also be a result of climate change, according to Gladys Kalema of Conservation through Public Health.

According to the Directorate of Water Resources Management (DWRM), the bimodal annual rainfall experienced in the country is mainly influenced by the El Nino Southern Oscillation and Indian Ocean Dipole which determine the moisture content of the air masses that reach Uganda. Lake Victoria also plays a significant role in regulating the climate of the lake's basin. The lake obtains most of its water from precipitation and runoff from the Lake Victoria basin. Changes in the lake volume influence the mesoscale circulation and this affects the climate of southeast and southwestern Uganda. Projected temperature rise (Hepworth and Goulden, 2008; Oxfam, 2008; and DWRM, 2010) will increase evaporation over the lake's surface and lead to further decline in the water level and reduce its climate

regulatory role. Also, this will affect agricultural activities especially coffee production and hydro-electric power generation for domestic and commercial use.

A detailed analysis of potential climate change threats to livelihoods and biodiversity is presented in Annex F.

4. POLICY AND INSTITUTIONAL FRAMEWORK

4.1 E/NR POLICIES, LEGISLATION, PLANS, AND STRATEGIES

CLIMATE CHANGE POLICY

Currently, Uganda does not have a climate change or climate change adaptation policy. The NAPA, which was developed in 2007 with funding from the UNDP GEF, is used as the guiding framework for climate change interventions (National Adaptation Plan of Action [NAPA], 2007). It is the tool that is used for implementing action plans for climate change. It defines vulnerability to climate change in the context of natural resources, livelihoods, and socio-economic development (ACCRA, 2010). Although the NAPA attempts to cover the major tenets of various protocols, treaties, agreements, and conventions related to climate change, it is not exhaustive enough; hence a national policy on climate change adaptation is needed. The activity descriptions of NAPA have been criticized for lacking specific target sites for Uganda, a clear mechanism for funding its activities, technical rigor in prioritization, and lack of detail on how budgets for the projects were calculated. Line ministries, moreover, appear to lack commitment to implement these activities (ACCRA, 2010; Hepworth and Goulden, 2008). The Coordinator of the Climate Change Unit expressed his optimism that a national climate change policy framework will be ready by 2012. However, it is not known when the Ugandan parliament may pass legislation that addresses changes in climate.

Uganda's **Constitution** (1995) states that “the State shall protect important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda.” Objective XXVII (i) obliges the State to promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations. Article 39 enshrines the right of every Ugandan to a clean and healthy environment. Under Article 237 (2) of the Constitution, the government holds in trust for the people and is required to protect natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological or tourism purposes for the common good of all citizens.

NATIONAL ENVIRONMENT MANAGEMENT POLICY, 1994

The overall goal of National Environment Management Policy, 1994 is to promote inter-generational equity and sustainable development that maintains and enhances environmental quality and resources periodically to meet the needs of the present generation without compromising the ability of future generations to meet their needs.

THE UGANDA WILDLIFE POLICY, 1999

The draft Uganda Wildlife Policy of 1999 is a revision of an earlier version prepared in 1995 before the enactment of the 1996 Wildlife Statute (since superseded by the Wildlife Act Cap 200 of 2003). The main aim of this policy is to make wildlife management acceptable to the majority of Ugandans by ensuring that wildlife resources contribute to the well-being of present and future generations.

The policy seeks to conserve areas of significant biological diversity which are representative of the major habitats of Uganda and include all native wildlife species. The policy also seeks to ensure that all wildlife protected areas are managed according to sound management principles.

NATIONAL FORESTRY POLICY, 2001

The goal of the National Forest Policy is to have an integrated forest sector that achieves sustainable increases in economic, social, and environmental benefits from forests and trees for all Ugandans, but most especially the poor and vulnerable. The three pillars of forest sector development are given as poverty eradication, socioeconomic development, and sustainable forest resource management. The National Forest Plan, 2002 is the means through which the national forestry policy will be translated into action. It provides for the development of the forestry sector that safeguards the nation's forest biodiversity and environmental services through effective conservation strategies. One of the policy statements deals with conservation of forest biodiversity and management in support of local and national socioeconomic development and international obligations.

WATER RESOURCES POLICY, 1999

The National Water Policy, 1999 promotes an integrated approach to manage the water resources in ways that are sustainable and most beneficial to the people of Uganda. The future framework for management and functioning of the water sector is based on the Water Act (1995), National Water Policy (1999), The Local Government Act (1997), and ongoing water sector reforms. The Water Policy was developed under two distinct categories: Water Development and Use and Water Resources Management. Water Resources Management covers objectives, principles and strategies for assessment, allocation, monitoring and protection of the resources and management framework.

THE NATIONAL ENVIRONMENT ACT CAP 153

This Act provides for a developer of a project to submit a project brief to the lead agency, in the prescribed form and giving the prescribed information. Where a project/activity may have, is likely to have or will have significant impact on the environment, an environmental impact study should be conducted. Section 36 lists prohibited activities in a wetland. Accepted traditional uses are, however, exempted from these provisions. Section 41 provides for guidelines for conservation of biological diversity, including specification of national strategies, plans, and programs for the conservation and sustainable use, and inventory of biological diversity.

THE NATIONAL ENVIRONMENT (WETLANDS, RIVERBANKS AND LAKESHORES MANAGEMENT) REGULATIONS 2000

Central Government or Local Governments shall hold in trust for the people and protect wetlands, riverbanks and lakeshores for the common good of the citizens of Uganda. The Regulations provide a list of regulated activities whose implementation in wetlands is subject to issuance of a Permit granted by NEMA in consultation with the Lead Agencies. These include brick making, recreation activities such as sport fishing, maintenance of green spaces, cultivation, drainage, commercial exploitation, sewerage filtration, fishing using fish gear and weirs, fish farming, and other aquaculture. Others are construction of transport and communication facilities such as roads, railways, telephone lines, burning and any other exploitative activity which is of a commercial or trade nature, such as harvesting of papyrus for commercial purposes. Every landowner, occupier, or user who is adjacent or contiguous with a wetland, riverbank and lakeshore has a duty to prevent the degradation or destruction of the wetland, and to maintain ecological and other functions of the wetland.

THE ENVIRONMENT IMPACT ASSESSMENT REGULATIONS, S.I. NO 13/1998

According to these regulations, an EIA is to be conducted in accordance with terms of reference prepared by the developer in consultation with the Authority (NEMA). As per section 12, public participation in the EIA is a requirement.

THE WATER ACT CAP 152'S objectives are to:

- a) Promote the rational management and use of water resources of Uganda
- b) Promote the provision of a clean, safe and sufficient supply of water for domestic purposes to all persons
- c) Allow for orderly development and use of water resources for purposes other than domestic use
- d) Control pollution and to promote the safe storage, treatment, discharge, and disposal of waste which may pollute water or otherwise harm the environment and human health

The National Forestry and Tree Planting Act, 8/2003 provides for the conservation, sustainable management and development of trees and forests for the benefit of the people of Uganda. Section 38 requires that any person intending to undertake any project or activity which is likely to have significant impact on a forest shall undertake an EIA.

The Wildlife Act Cap 200's purposes are, among others to promote:

- i. The conservation of wildlife throughout Uganda so that the abundance and diversity of their species are maintained at optimum levels commensurate with other forms of land use, in order to allow for sustainable utilization of wildlife for the benefit of the people of Uganda.
- ii. The protection of rare, endangered and endemic species of wild plants and animals.
- iii. The enhancement of economic and social benefits from wildlife management by establishing wildlife use rights and the promoting of tourism.

The Act also provides that the ownership of every wild animal and wild plant existing in its wild habitat in Uganda is vested in the Government, on behalf of, and for the benefit of, the people of Uganda. Further, any developer desiring to undertake any project which may have a significant effect on any wildlife species or community shall undertake an environmental impact assessment in accordance with the National Environment Act.

The Land Act, 1998, Section 43 states that a person who owns or occupies land shall manage and utilize the land in accordance with the Forests Act, the Mining Act, the National Environment Act, the Water Act, the Uganda Wildlife Act and any other law.

The National Development Plan, 2010 has objectives and interventions specified for forestry, tourism, mining, oil and gas, energy, water resources, environment, and wetlands sectors with biodiversity conservation subsumed within the environment sector but with no specific interventions specified for the sub-sector. The absence of specific interventions for the biodiversity sub-sector in the NDP implies that there will be no budgetary allocation for the sub-sector during the annual planning and budgeting cycles resulting in non-implementation of substantive biodiversity conservation activities. UWA however is self-financed up to 80% of operating expenses (this excludes the amount needed for capital expenses – vehicles, equipment, buildings). UWA's expenses are mainly generated from the revenue from Bwindi-Mgahinga and Queen Elizabeth National Parks. UWA relies on Ministry of Finance and donors to fill budgetary gaps.

THE INTEGRATED TOURISM DEVELOPMENT MASTER PLAN 1992 AND NATIONAL TOURISM POLICY 2003

In 1992, the Government of Uganda launched the Integrated Tourism Development Master Plan, a policy document that defines the roles of Government and other stakeholders in the development of tourism. The key actions set out in the Master Plan include:

- a) Setting up of the Uganda Tourist Board to promote the tourism industry of Uganda both in and outside the country.
- b) Setting up of the Uganda Wildlife Authority to conserve the wildlife and other resources of natural scenic and scientific value in those areas under its jurisdiction.
- c) Formation of the Wildlife Training College in Kasese
- d) Setting up of the Hotel and Tourism Training Institute in Jinja

The aim of the National Tourism Policy is to ensure that tourism becomes a vehicle for poverty reduction to the extent possible within the resource base and market limitations. The policy also provides for the channeling of tourism revenues towards the protection of the natural resource base in national parks and other protected areas.

The Integrated Tourism Development Master Plan (1992) and the National Tourism Policy (2003) are out of date. The Ministry of Tourism Trade and Industry (MTTI) is in the process of revising the Tourism Plan. The date of publication of the revised Plan is not yet known. Because of the age of the Plan, essentially, Uganda has no National Tourism Plan. The channeling of tourism revenues towards the protection of the natural resource base in national parks and other PAs as provided for in the Tourism Policy is not provided for in the National Development Plan (2010). Therefore, the Tourism Policy is a good statement of intent but lacks support in government plans and actions.

AGRICULTURE SECTOR DEVELOPMENT STRATEGY AND INVESTMENT PLAN (DSIP): 2010/11- 2014-15

states that the sector faces a daunting set of output-level challenges that include declining soil fertility, over-exploitation of fish stocks; uncertain land rights, inadequate institutional coordination and linkages, negative consequences of climate change, and degradation of the natural resource base, among others. However, none of the development and immediate objectives of the DSIP address E/NR challenges. The objectives mostly focus on increasing rural incomes and livelihoods, household food and nutrition security, agricultural factor productivity, and developing markets and value chains for agricultural products, among others. The need for sustainable natural resource management and biodiversity conservation is acknowledged in the agriculture sector DSIP. However, no intentions are laid down, no actions are prescribed, and no budget is provided to address this need.

NATIONAL AGRICULTURAL ADVISORY SERVICES (NAADS) guiding principles include market-oriented farming, intensifying productivity and profitability, and managing natural resource productivity. NAADS was formulated as basically a demand-driven agricultural extension framework but has practically transformed itself into a farm inputs delivery system. NAADS-supported enterprises are selected by farmers and in principle even natural resources and environment-related enterprises are eligible for support once selected but in practice these are hardly on the list of farmers preferences. Conclusively, sustainable natural resources management and biodiversity conservation are practically outside the scope of NAADS supported enterprises among farming communities.

PROSPERITY FOR ALL is a full-fledged government effort to address the entire range of the value chain that encompasses production, micro-finance, marketing and processing of agricultural products. However, the production component does not include sustainable natural resources management and biodiversity conservation as exemplified by massive deforestation in areas of upland rice production.

The Mining Act 2003 requires every holder of an exploration license or mining lease to:

- a) Carry out an environmental impact assessment (EIA) of the mining operations in accordance with the provisions of the National Environment Act, Cap 153.

- b) Secure a Certificate of Approval of EIA from NEMA.
- c) Carry out an annual environmental audit.
- d) Ensure the prevention and minimization of pollution of the environment.
- e) Submit an environment management plan and an environmental restoration plan to Geological Surveys and Mines Department and NEMA.

4.1.1 ANALYSIS OF E/NR POLICIES, LEGISLATION, PLANS AND STRATEGIES

The E/NR policies, legislation, plans, and strategies presented in section 4.1 are fairly comprehensive in their coverage of the sector. Even the PMA, NAADS, and Prosperity for All would accommodate sustainable NRM and biodiversity conservation if properly interpreted and implemented in their entirety. The need for harmonization of E/NR policies, legislation, plans, and strategies is more about their correct interpretation and implementation and less about the need for additional amendments or enactments (See Section 5). Most of the gaps in the current legislation concern absence of statutory instruments to help interpret and enforce the laws. Specifically, the National Forestry and Tree Planting Act, 8/2003 and the Wildlife Act, Cap 200 lack statutory regulations necessary to facilitate their interpretation and enforcement. A Land Law has not been approved that would strengthen customary land ownership, the dominant land ownership category; a land law would provide the legal basis for sustainable NRM and biodiversity conservation outside wildlife and forest PAs. Also, as mentioned, the NDP does not provide specific intervention strategies for biodiversity conservation and this does not allow the sub-sector to qualify for budgetary allocations during the annual planning and budgeting cycles. Placement of the biodiversity sub-sector within the environment sector appears to be the main reason for marginalization of the sub-sector. The set of E/NR policies, legislation, plans and strategies has remained the same since 2006, when the last USAID/Uganda 118/119 was prepared, except for the NDP that was developed in 2010.

4.2 KEY INSTITUTIONS INVOLVED IN BIODIVERSITY CONSERVATION, TROPICAL FOREST MANAGEMENT AND WETLANDS & WATER RESOURCES MANAGEMENT

4.2.1 GOVERNMENT INSTITUTIONS

National Environment Management Authority (NEMA) is the agency responsible for ensuring sound environmental management and biodiversity conservation within the whole country; the agency works in conjunction with respective E/NR sector lead agencies. NEMA is affiliated to the Ministry of Water and Environment (MWE).

Uganda Wildlife Authority is the agency responsible for management of wildlife in the country both within and outside wildlife PAs. UWA is a semi-autonomous agency within the Ministry of Tourism, Trade and Industry and was established in 1996 to ensure sustainable management of wildlife and coordinate, monitor, and supervise activities related to wildlife management. The Mission of UWA is: to conserve, economically develop and sustainably manage the wildlife and protected areas of Uganda in partnership with neighboring communities and other stakeholders for the benefit of the people of Uganda and the global community. UWA has developed strategic programs in a number of areas including conservation and natural resources management, and research and ecological monitoring (UWA Strategic Plan 2007-2012).

Forest Sector Support Department (FSSD) of the Ministry of Water and Environment is the agency responsible for coordination, monitoring, and supervision of the forest sector and is one of the three entities created following restructuring of the former Uganda Forest Department.

National Forest Authority is a semi-autonomous agency affiliated to the MWE, and is the agency responsible for the management of Central Forest Reserves and is also one of the three entities created following restructuring of the former Uganda Forest Department. Both the NFA and the **District Forest Services** (DFS) are overseen and coordinated by the FSSD. The **FSSD** is the technical arm of the Ministry of Water and Environment that is responsible for formulation and oversight of appropriate policies, standards, and regulations for the forestry sector. It coordinates and supervises technical support and training of district forest staff; and inspects and monitors performance in the forest sector under NFA and local governments. It is also responsible for coordinating the National Forest Plan, cross-sectoral linkages, mobilizing funds for the forest sector, and promoting public information and advocacy for the sector (Nsita, 2010). The NFA, DFS, and FSSD were formed during the reform of the forest sector that saw the previously centralized Forest Department phased out in June 2003. However, FSSD and DFS have been largely unable to perform their mandates due to limited support from government thereby rendering them grossly understaffed and lacking logistics and basic equipment.

District Forest Services is the District Local Government Department responsible for management of local forest reserves (LFRs) and ensuring sustainable management and conservation of forest patches on privately and communally owned lands. DFS is affiliated to the Ministry of Local Government.

National Forest Resources Research Institute (NaFORRI) is the agency responsible for undertaking forest research in Uganda including aspects related to sustainable forest management and conservation of biological diversity. NaFORRI is affiliated to the National Agricultural Research Organization (NARO) of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

Wetlands Management Department (WMD) of the Ministry of Water and Environment is the agency responsible for sustainable management and conservation of wetland resources in Uganda.

Fisheries Department (FD) of the Ministry of Agriculture, Animal Industry and Fisheries is responsible for sustainable fisheries resources management in Uganda in conjunction with Local Governments and Beach Management Units.

Water Resources Management Department (WRMD) is the agency responsible sustainable water resources management and regulation including coordinating watershed management activities in Uganda. WRMD is affiliated to the MWE.

Petroleum Exploration and Production Department (PEPD) of the Ministry of Energy and Mineral Development is the agency responsible for regulation of oil and gas activities in Uganda.

Climate Change Unit (CCU) of the Ministry of Water and Environment is responsible for coordination climate change activities in Uganda.

Uganda Tourist Board (UTB) is a statutory organization established by the Uganda Tourist Board Statute 1994. The Board's mandate is to promote and popularize Uganda as a viable holiday destination both locally and internationally. In pursuit of this mandate, the functions of the Board are to:

1. Increase the quality and volume of tourist arrivals and their expenditures.
2. Improve on the marketing and promotion of Uganda as a tourist destination.
3. Provide of accurate and timely information services on the country's tourist attractions and facilities.
4. Strengthen its capacity for tourism planning, research and marketing
5. Improve and diversify in consultation with stakeholders' tourist products.

6. Enhance and strengthen competitiveness of the private sector in the tourism industry.

The GOU is seen as less aggressive than its neighbors in tourism promotion. The GoU allocates US\$1 million annually to UTB for all operations and marketing, whereas Tanzania and Kenya on average allocate US \$10million.

4.2.2 NON-GOVERNMENTAL ORGANIZATIONS

Several international NGOs are managing environment-related and biodiversity conservation programs in Uganda. The main ones are World Wildlife Fund (WWF) implementing a UNDP/GEF-funded project titled “Conservation of Biodiversity in the Albertine Rift Forests of Uganda”; IUCN; CARE International in Uganda; Wildlife Conservation Society (implementing USAID’s WILD program; African Wildlife Foundation/International Gorilla Conservation Programme, and Jane Goodall Institute.

4.2.3 UNIVERSITIES

Universities in Uganda with environment-related and biodiversity conservation programs include Makerere University, Gulu University, Mbarara University of Science and Technology (MUST), Kyambogo University, and Busitema University. Biodiversity conservation teaching and research at Makerere University are undertaken in the Faculty of Forestry and Nature Conservation (FFNC) and in the Makerere University Institute of Environment and Natural Resources (MUIENR). Specialized institutes that undertake research on biodiversity conservation in Uganda include Makerere University Biological Field Station (MUBFS) located in Kibale National Park and the Institute of Tropical Forest Conservation (ITFC) located in Bwindi Impenetrable National Park and affiliated to MUST.

4.2.4 PRIVATE SECTOR ORGANIZATIONS

Uganda Tree Growers Association (UTGA) is an umbrella association of private sector organizations involved in tree planting within and outside central forest reserves. Notable among UTGA members are Busoga Forestry Company/Green Resources AS Norway, New Forests Company of Uganda, and Global Woods. As mentioned, there are private sector partners in wildlife management and conservation and tourism, among them, Ziwa Ranch and Uganda Wildlife Safaris. There are many private sector tourism operators in Uganda, and these are organized under the Uganda Tourism Association (Section 4.2.5).

4.2.5 CIVIL SOCIETY ORGANIZATIONS

Environmental advocacy work in Uganda is undertaken by several civil society organizations (CSOs) and these include Advocates Coalition for Development and Environment (ACODE), Uganda Wildlife Society (UWS), and Climate Action Network Uganda (CAN-U), among others. Other CSOs are involved in tourism promotion and related businesses: Uganda Tourism Association; Uganda Tour Operators Association; and Uganda Community Tourism Association (UCOTA), which is a network of community tourism enterprises throughout the country. Wildlife Clubs is based in schools and promotes interest and activities in wildlife, conservation, and tree planting. There are many CSOs that work only or in part on wildlife conservation, habitat improvement, sustainable natural resource use, tree planting, and environmental education. Some focus on specific habitat types, for example, on wetlands; some focus topically, for example on natural resources enterprises or on community-based tourism. Some are geographically focused, for example, there are several CSOs around Kibale National Park that work at the nexus of conservation and development.

4.2.6 ANALYSIS OF KEY INSTITUTIONS INVOLVED IN BIODIVERSITY CONSERVATION

In the GOU, the E/NR sector is split between two ministries, MWE and MTTI. This leads to lack of communication and collaboration, and as noted below, in Section 4.2.7, a disorganized E/NR sector.

The effectiveness of NEMA in the execution of its functions is undermined partly by its structure and partly by limited staff and funds. NEMA operates fairly effectively at Kampala level where the headquarters are located. The presence of NEMA in up-country locations is hardly felt due to absence of field offices at regional and district levels. District Environment Departments tend to work as proxy extensions of NEMA but these are also constrained by limited staff and funding besides being local government institutions with voluntary allegiance to NEMA. The World Bank financed the Environmental Management and Capacity Building Project under which NEMA received substantial support. The project has ended, however, leaving almost all staff in NEMA with contracts of only one year and therefore considerable job insecurity.

UWA is fairly effective in the execution of its functions; however, recent political interference has undermined public confidence in the organization. UWA follows a strategic plan that is now being updated; each PA has a General Management Plan, which guides its actions, and staff is well-trained and well-equipped. As previously mentioned, UWA raises 80% of its operating expenses, and only requires 20% from the Ministry of Finance and donors, as well as additional funding for capital expenses. This is a significant change from a decade ago when 100% of UWA's budget came from donors.

The NFA and DFS have few field staff and are unable to implement their mandates, as evidenced by the continuation of illegal activities in both central and local forest reserves. FSSD has only a small secretariat in Kampala with almost no influence on field activities. Forest patches on privately owned lands lack oversight with respect to sustainable management and biodiversity conservation and are being eliminated at an accelerating rate. The capacities of Local Governments Departments of Environment and Natural Resources (DFS, District Environment and Wetlands Department, Department of Lands, and Department of Fisheries) are limited and this constrains their abilities to fulfill their respective mandates. Moreover, the reporting lines of the district departments correspond to the Ministry of Local Government and this makes it difficult for them to access necessary technical support from the MWE and associated departments such as FSSD, NFA, and NEMA. The district ENR Departments are also vulnerable to adverse effects associated with the proliferation of new districts in the country such as instability in staffing levels.

Additionally, there is limited coordination at national level among key institutions involved in biodiversity conservation as the E/NR sector is split between the MWE, the Ministry of Lands and Urban Development (MLUD), the MTTI, the Ministry of Energy and Mineral Development (MEMD), and the MAAIF. There have been attempts to strengthen coordination among these ministries and their affiliated departments through the Sector Wide Approach to Planning (SWAP) but these efforts have not yet produced results.

International conservation organizations would add value to sustainable NRM and biodiversity conservation in Uganda if their work was harmonized and closely coordinated with Ugandan institutions – this would help ensure sustainability. The present disjointed efforts by these organizations have resulted in low impact. The ETOA team noted this when they visited a lion conservation project, and later visited QEPA. When the team mentioned the lion project to QEPA staff, they were unaware of it. If there is no coordination with Ugandan institutions that are in charge of the resources, there is less chance for sustainability and success.

4.2.7 DONOR ACTIVITIES

Table K-1 in Annex K details current donor activities in the E/NR sector. The annex includes two donor success stories, one in forestry (Sawlog Production Grant Scheme, SPGS) and one in PA management (Protected Area Management and Sustainable Use, PAMSU). Future donor plans, including USAID's, are described below.

USAID's proposed future involvement in the E/NR sector will cover support for climate change (mainly as part of livelihood adaptation); involvement in the oil sector, with a focus on environmental management and governance; and continued engagement in the tourism sector, specifically, the ecotourism sub-sector, as a means to biodiversity conservation. A brief review of USAID's history in the biodiversity sector is included in Annex K as Table K-2.

During the timeframe of USAID's CDCS, the World Bank plans to increase involvement in the E/NR sector. Currently, a new five-year program is being developed which will replace PAMSU. Design is in a very early phase, and the World Bank is coordinating with GOU to identify areas of interest (no additional information was available on this project at the time the ETOA was prepared). The World Bank has commissioned two studies, one on the political economy in the E/NR sector, and one on governance in the E/NR sector. These studies are intended to inform the World Bank about how to proceed in the sector given the current situation, especially concerning the governance and accountability issues at UWA and NFA, but also more broadly, covering the entire E/NR sector. It is likely that these two studies will have valuable information for USAID in designing programs under the CDCS. Section 6 includes a recommendation for USAID to monitor progress of the studies through the E/NR donor group.

Norway's plan for future involvement in the E/NR sector is to continue to work jointly with the EU (2009-2013). The sector remains a priority in Norway's cooperation with Uganda. Norway co-chairs the donor group on E/NR with the World Bank. Norway has been the key donor engaged in the forestry sector and is planning on strengthening its cooperation within that sector.

The African Development Bank's (AfDB) future involvement in the E/NR sector is to design a follow-up project to FIEFOC to implement beginning in 2013 after phase 1 is completed. The EU delegation recently updated the Country Environment Programme in consultation with Member States, and in accordance with this report (which provides guidelines on how to further promote environment mainstreaming in the EU portfolio and how to "climate-proof" the EU-Uganda cooperation portfolio), the EU will continue involvement in E/NR at the same level. GTZ's plan for future involvement in the E/NR sector is to design a program extension to the Reform of the Urban Water and Sanitation Sector program for 2011-2014 with proposed budget of \$6.0 million (up from \$4.8 million over 2008-2011). Belgium will decrease involvement due to changing priorities; Denmark plans to be involved in the E/NR sector at the same level as in the past; DfID plans to increase future involvement; FAO engagement will remain the same as in the past; JICA and UNDP plan to increase involvement in the E/NR sector; and WFP plans to remain at the same level or possibly to increase funding to the E/NR sector.

DONOR COORDINATION

The World Bank and Norway co-chair the donor group on E/NR; they are considered the most active countries in E/NR donor coordination, and the leading donors in E/NR in Uganda. E/NR donors feel that donor coordination efforts in the sector are disorganized; this is in part attributed to the disorganization in the GOU E/NR sector, where E/NR is split between two ministries, MWE and MTTI.

E/NR donors stated that while sometimes USAID attends the E/NR DG, the feeling is widespread that USAID acts independently of other donors. Those interviewed stated that donor coordination would be much stronger if USAID took an active role; USAID is one of Uganda's main development partners, and can play a strong role in advocating for biodiversity conservation. This is seen as particularly important in the current environment Sawlog Production Grant Scheme, SPGS – with UWA and NFA governance problems and with the oil sector, expected to play a significant role in Uganda's future. Most donors felt that USAID needs to play a more active role so that donors could act as one on engagement

with UWA and NFA and provide strong oversight of the oil sector. Section 6 (Recommendations – Strengthening Donor Coordination) includes several areas for which USAID could advocate and leverage support from other donors.

The Energy and Minerals Donor Group (EM DG) coordinates donor funding and activities in the oil sector. USAID/Uganda should continue to play an active role in the EM DG given the institutional issues in the oil sector that Uganda faces.

DONOR GAPS

Significantly, funding directly for biodiversity conservation is decreasing, while support for climate change and renewable energy is increasing. The World Bank's PAMSU was one of the main programs that provided support directly to UWA for PA management. Although the new World Bank project has yet to be designed, it will likely provide some support to UWA, however no information is available on whether there will be an increase, decrease or no change in support level. During the 1990s and early 2000s, donors showed stronger support for biodiversity conservation and PA management – GTZ supported management of Murchison Falls National Park; DfID supported management of Lk Mburo National Park; and USAID provided funding for Queen Elizabeth Protected Area and Bwindi and Mgahinga national parks. With the increased threats biodiversity faces (see Section 5), this is an ominous turn of events for Uganda's PAs.

In addition, given the significant impacts to Uganda's wetlands and the lack of formal protection, wetland conservation and sustainable use is another area that should attract more donor attention than it currently does (the Netherlands previously provided support for the conservation of wetlands, but now supports renewable energy and trans-boundary projects). Another gap is in support for NEMA now that the World Bank-financed Environmental Management and Capacity Building Project has expired.

Recommendations to USAID to help fill donor gaps are in Section 6.

5. THREATS TO BIODIVERSITY; ACTIONS NEEDED TO CONSERVE BIODIVERSITY; AND EXTENT TO WHICH USAID ACTIONS MEET THE NEEDS

The ETOA team held interviews, reviewed documents, and conducted site visits to identify primary threats to biodiversity, root causes of the threats, and actions needed to address the threats. At the end of the ETOA investigation phase, the ETOA team held an internal meeting to synthesize the many threats, root causes, and actions needed; results of the team’s deliberations are presented below.

The 2006 118/119 assessment identified four principal threats to biodiversity conservation in Uganda: 1) habitat loss/degradation/fragmentation, 2) unsustainable harvesting and over-exploitation of living and non-living resources, 3) invasion by introduced species, and 4) pollution/contamination. The ETOA-2011 team framed the threats differently, as described below, but in general, found the overall threats facing biodiversity to be the same – although most have now increased in magnitude. For example, commercial and residential developments are increasingly encroaching on natural areas, especially wetlands; the oil discovery has already resulted in environmental impacts; wood fuel continues to be the main source for cooking and lighting for Uganda’s growing population; and one of the root causes of the threats – high rate of population growth – has yet to be checked. In addition, the ETOA-2011 team found that invasive species is a threat, but that most important, it is related to ecosystem changes that, at least in part, are causing wildlife to move outside of PA boundaries, resulting in human-wildlife conflicts. The 2006 report found that armed conflict, civil unrest, and refugees were threats; the ETOA team was glad to find that this threat has been significantly reduced (although the return of refugees in the north is still resulting in habitat degradation and destruction). The ETOA-2011 team identified two “game changing” threats to biodiversity – oil sector development and land use conflict around PAs and communities (these are described in detail in Annex J).

5.1 PRIMARY THREATS TO BIODIVERSITY

Uganda’s biodiversity faces many threats. These are categorized in the ETOA SOW as (1) *related to human use* (i.e., commercial and residential development, agricultural expansion), (2) *ecological threats* (i.e., climate change, fire, invasive plants, and land tenure/conflicts), and others related to (3) *institutional, policy, and social* issues (typically considered “root causes” and described in Section 5.2). As required by the ETOA SOW, trans-boundary threats are also discussed.

THREATS RELATED TO HUMAN USE

Threats to biodiversity related to human use may result in habitat degradation, destruction, pollution (air, water, soil), and most significantly, large-scale landscape changes. These threats include expansion of agricultural land into PAs and wetlands; environmentally unsound use of pesticides and fertilizers for agricultural production and pesticides for malaria control (in particular DDT because of its effect on birds' eggshells and subsequent reproduction success); inappropriate livestock grazing in PAs, wetlands, and along stream and riverbanks; poorly planned residential, commercial, and industrial developments, including ancillary activities (e.g., roads and sewage works); mining in an environmentally unsound manner; oil drilling (and forthcoming oil production) and ancillary features, especially in PAs and other areas important for wildlife (i.e., migration corridors); and power production, especially hydro-power, and its impacts on water regimes. While environmental legislation is strong, it is often not implemented; if existing regulations was enforced, many of these threats would be significantly diminished.

In many parts of Uganda, agriculture, commercial, residential, and industrial developments, mining, and livestock compete for the same land as biodiversity conservation. In the recent past there have been demands that continue today (2011), for large-scale land use changes – for example, in Karamoja and Semliki areas; but conversion from natural areas to other uses happens at smaller-scale throughout Uganda on a daily basis.

Agricultural expansion has resulted in encroachment into PAs and in boundary conflicts. Encroachment is a major threat in Mt. Elgon National Park, Pian Upe, and East Madi Wildlife Reserves. Because of more limited protection mechanisms, it is an even bigger threat for areas within Wildlife Sanctuaries and Community Management Areas. Agricultural expansion is also cited as a threat to wetlands, especially in eastern Uganda where rice growing is widespread, and in southwestern Uganda where wetlands have been reclaimed for vegetable growing and cattle grazing.

The WMD cites the main threat to wetlands in Uganda as development pressure – most of it having occurred in the last five years, and many developments being unplanned and unapproved. However, exact figures reflecting the impact of these activities on the extent of wetlands are unavailable and so no comparison can be made with the last estimate of 484,037 ha made in 2003 (IRG, 2006).

Aquatic biodiversity in Uganda is threatened by rampant forest degradation, expansive agriculture, and development. Poor agricultural practices on steep slopes of watersheds are a main factor behind siltation of rivers, streams, wetlands, and lakes. This is particularly happening in the hilly terrain of the southwest (districts of Kabale, Kisoro) and in eastern Uganda (on the slopes of Mt. Elgon). Aquatic biodiversity in the Albertine Rift is threatened by the ongoing oil exploration that has triggered and that will continue to trigger development of infrastructure such as roads, bridges, refineries, and pipelines – these result in temporary (during construction phase) and sometimes in permanent damage to aquatic biodiversity. In particular, because of the absence of an environmentally sound waste management plan, mud waste from exploratory drilling is affecting aquatic ecosystems.

Contamination is a particular threat to Uganda's aquatic biodiversity, since the effluents, produced more by its dense population than by its incipient industry, generally flow directly into its numerous lakes and rivers. Lake Victoria's water recently became so contaminated that the cost of treating Kampala's water supply tripled (Tindimugaya, pers comm 2011). Uganda, moreover, must contend with the fact that 95% of its water originates in neighboring countries; consequently, if they contaminate their water the quality of Uganda's water suffers.

Some specific, recent examples of threats related to human use are provided below:

(a) The growing of upland rice, tobacco, and sugarcane through shifting cultivation in Kibale, Hoima, and Masindi districts in western Uganda is rapidly depleting forest patches on communally and privately

owned land and reducing connectivity between wildlife and forest PAs in the region (Itwara, Muzizi/Kangombe, Bugoma, Wambabya and Budongo CFRs and Murchison Falls National Park-MFNP).

(b) Paddy rice cultivation in Tororo, Pallisa, Namutumba, and other neighboring districts has severely degraded wetland resources in eastern Uganda.

(c) Commercial oil palm plantations on Bugala and other islands on Lake Victoria in Kalangala District have led to great forest destruction and habitat loss.

(d) Crop cultivation has severely reduced the habitat value of South Busoga CFR due to inability of NFA to adequately manage the reserve in the face of this threat.

(e) Uncontrolled livestock grazing in Kaiso-Tonya Community Wildlife Management Area has severely reduced the habitat value of this resource.

(f) Oil exploration in the Albertine Rift could cause significant degradation of habitats within and outside wildlife PAs in western Uganda. In response to the potential for oil production, there have been calls to de-gazette parts of PAs. Even now during the drilling phase, roads have been constructed and traffic has significantly increased in MFNP (The ETOA team was told that during six months of drilling, 400 additional vehicles were driving through the PA on a regular basis). The drilling mud and poor lack of planning for disposal of this waste has already resulted in contamination in MFNP waters. (This game changing threat is discussed in more detail in Annex J, and recommendations to USAID are included in the Annex.)

(g) Alongside the road from Kampala to Iganga are residential, commercial, and industrial developments built in wetlands. Many of these wetlands had been in good ecological condition and supported fish, birds, and other wildlife, and also provided environmental services such as flood attenuation and water filtration. These services are now significantly impaired.

(h) Factories in Uganda tend to pump untreated (or partially treated) effluent into water bodies e.g. East African Breweries Limited pumps effluent into Lake Victoria at Portbell Luzira. Also, Nile Breweries Limited pumps effluent into the Nile River. Kasese Cobalt Company Limited pumps effluent into the Rukoki River that eventually flows into the Lake George Ramsar Site. This effluent affects fisheries and other aquatic biodiversity. While all such factories require EIAs and permits, once approved, compliance is limited.

(i) The huge volumes of partially fermented or raw sewage entering Lake Victoria at Luzira were reported by Water Resources Management Department (WRMD 2011) as having led to rising costs of water treatment being faced by the National Water and Sewerage Corporation (NWSC). Lake Victoria is contaminated by untreated human waste from the ever-growing population in Kampala City, especially from Luzira, Ggaba.

(j) Misuse of agricultural inputs can affect ecosystems and individual species (as well as human health). Increased use of NPK fertilizer has been attributed to the increasing level of eutrophication in Lake Victoria. Introduction of genetically modified organisms (GMOs) and hybrid varieties are not currently primary threats to biodiversity in Uganda and are unlikely to become significant threats in the near future.

(k) In 2008, construction of a hydropower plant on the Dura River in QENP nearly resulted in the total destruction of a cycad species known to occur only in Uganda. Construction of the Bujagali dam and hydro-electric power station will result in closure in 2011 of Bujagali falls to rafting upstream from the falls. When the plant is built, the falls and islands will be submerged. Vegetation and biodiversity will be

lost, including crabs, birds, and trees characteristic of the area. The tourism industry will also be dramatically affected.

(l) The major geothermal areas are Katwe-Kikorongo (Katwe), Buranga and Kibiro.

They are all situated in the Western branch of the East African Rift System. Other geothermal areas are located on the outskirts and/or close to the rift valley in southwest Uganda and Northern Uganda. For geothermal energy, there is an initial environmental impact as the geothermal plant is set up – road building, drilling, capping, piping, and buildings. There may be an escape of various greenhouse gases such as carbon dioxide and methane from the drilling, but these will be temporary. Electricity pylons will be needed to connect the geothermal power station to the main grid. These could impact birds during flight. Once the plant is set up, the environmental impacts are usually minimal.

(m) Kilembe mines in Kasese District that closed down in the mid-1980s accumulated stockpiles of copper pyrites; runoff from these pyrites contains sulphites that form sulphuric acid that is scorching the vegetation of part of QENP. Kasese Cobalt Corporation Limited (KCCL) was started as a mitigation measure to help clear the stockpiles by using the copper pyrites as a raw material for production of cobalt. However, KCCL is itself producing effluent that is polluting Rukoki River and Lake George.

(n) Other mining is for extraction of clay for brick making, and sand for use in construction. These are especially detrimental to wetland areas. Kitubulu Central Forest Reserve in Entebbe has also been affected by this extraction. Stone quarrying also occurs and affects landscapes and vegetation, and impacts wildlife, including indirect impacts from hunting by workers. This is the case in some forest reserve areas, such as Kikonda Central Forest Reserve.

UNSUSTAINABLE OFF-TAKE AND ILLEGAL EXPLOITATION

A sub-set of threats related to human use is unsustainable off-take and illegal exploitation. These include hunting, wildlife trade, harvesting timber, fishing, and charcoal making. Historically, timber harvesting in Rwenzori, Bwindi, Kibale, and Mt. Elgon through the 1980s was a key threat to biodiversity conservation because of poor controls. During the period of Uganda's civil war, hunting caused the extinction of four species and drastic declines in the populations of another 11 species of Uganda's large mammals, as indicated in Table 3. Over-fishing in Lakes Edward and George depleted what was believed to be one of the world's most productive fisheries.

Illegal and over-exploitation remain severe threats to Uganda's biodiversity. Uncontrolled slaughter of mammal species no longer occurs, but poaching of animals for food still occurs within the boundaries of PAs – but more so outside. Although there are no reliable data, illegal hunting for bushmeat, particularly outside PAs, is devastating to wildlife. Whereas there is reasonable effort to address poaching in PAs, in areas outside there is hardly any enforcement mechanism. The most critically threatened areas, where poaching is most common, include central Uganda, the Islands on Lake Victoria, northern Uganda as displaced people return to the countryside, and the Karamoja region. Since 2006, efforts to address poaching outside PAs have mainly been through collaborative management with the private sector, local governments, and local communities so that they get direct benefits from wildlife (as described above, Sections 1.4 and 2). Hunting for bushmeat remains a threat, and has been especially noted to be on the rise in the Albertine Rift, as soldiers returning from the Congo to Rwanda and Uganda have developed a taste for bushmeat in the absence of any alternative sources of protein. Poaching poses a threat to elephants, hippos, buffalos, and larger antelope species in the savanna parks in Uganda and the DRC, while snares set by hunters have resulted in a quarter of the chimpanzees in Uganda having maimed limbs, including missing hands and feet (CI, 2007).

Exploitation of plants from within PAs, for firewood, in crafts, and for medicines also commonly occurs (Brown, 2005). Data were not available regarding the current extent of such exploitation of wild animals

and plants in Uganda, but it can be presumed that they are being over-exploited in many places, given the high number of people who live around national parks and depend on their resources for their livelihood (Brown, 2005), and given the poverty level of communities around the PAs. Whereas there is a widespread belief that collection of plant products for use in medicine, for vegetables, and to make crafts is sustainable, there is insufficient documentation on the species of plants used especially for medicine, and their distribution and conservation status.

Plumptre (pers comm 2010) estimates that 30,000 ha of natural forest on privately owned land were eliminated between 2000 and 2006 in the area to the south of MFNP. This forest area provided habitat for some of Uganda's most rare species and for many of the species that are endemic to the Albertine Rift. The ETOA team, Kutegeka (pers comm 2010), and others (as mentioned above) have observed that the natural forest that regenerated on abandoned cropland in northern Uganda during the civil war is now being cleared by returning refugees, although data on the extent of this clearing is unavailable. Kutegeka also notes that most of the natural forest on Mt. Elgon, even within the Mt. Elgon National Park, has been eliminated to create pasture and cropland.

Over-exploitation of natural forests for firewood is probably common (recent, reliable data are lacking), since firewood supplies 95% of all rural energy and 49% of the energy required by small and medium enterprises in Uganda (Ahimbisibwe, pers comm 2010). Illegal timber harvesting, hunting, and fishing still persist and all PAs and areas outside are susceptible. On paper there are sufficient safeguards and controls but in practice governance issues continue to mar effective regulation of biodiversity use through corruption, abuse of office, and populist political interventions especially during election times.

Some additional examples of unsustainable off-take/over-exploitation in Uganda are:

(a) Wood fuel (which includes charcoal and firewood) is used by about 90% of the country as their main source of cooking fuel (this includes urban areas). Forty-nine percent of SMEs use wood as their main source of fuel. Although the market is country-wide, central, northeast, and northern forests are now supplying most of the market. Charcoal is produced through selective removal of trees. *Combretum* spp. *Acacia* spp. *Albizia* spp, *Terminalia* spp, *Azela africana*, *Piliostigma thonningii* are mainly targeted as they make the highest quality charcoal. However, the species range has expanded to include also highly valuable fruit trees like mango, jack fruit and shea (NFA, 2011). In recent years, charcoal extraction has risen to unsustainable levels resulting in forest degradation and deforestation, especially in the woodlands. The majority of wood for making charcoal comes from private or community-owned land. However, as the trees are rapidly disappearing and as land owners are charging more for harvesting of trees from their land (Knopfle, 2008), an increasing amount of wood is obtained (often illegally) from forest reserves. FAO-FOSA (1995) estimates an annual increase of 6% in charcoal production, with a total of around 400,000 tons per year. Between 1996 and 1997, charcoal production increased by 7% from 418,000 tons to 447,000 tons (State of Environment Report for Uganda 1998). Charcoal consumption in Kampala, the main consumer, increased from 200,000 tons in 1995 to 300,000 tons in 2004 (Kisakye 2004). Another key demand point for Ugandan charcoal (mostly from Zuka forest in West Nile) is Southern Sudan, which is emerging from war and has disposable income. With the increased use of charcoal as a source of energy in urban areas, concerns are being raised about the health effects associated with its indoor use – many respiratory ailments are increasingly being associated with the indoor use of charcoal.

(b) Poorly regulated wildlife trade, especially in reptiles and birds, can adversely affect biodiversity. Between 2005 and 2010 there have been a number of seizures of illegally captured and traded wildlife according to the UWA CITES (Convention on the Illegal Trade in Endangered and Threatened Species) report. From the data available at UWA all the seized wildlife consignments have originated only from neighboring countries. There are legal, licensed wildlife enterprises, some of which incorporate good

practices; others fall short. But with a legal avenue for trade opened up, individuals and enterprises that operate illegally can find their way into the market.

(c) Over-fishing: Several fish species in L. Victoria have become extinct due to both overfishing and the introduction of the exotic Nile Perch. The Lake George fishery was virtually depleted in the 1980s and to date has failed to recover due to continued overfishing. Lake Edward straddles the international border with the DRC and is overfished from the Congo side, which has greatly affected the Ugandan side. The 12 “fishing villages” in QENP pose a threat to biodiversity since as fish is depleted, the residents then turn to other activities such as agriculture and livestock. In the last 20 years the area occupied by these villages has more than doubled as human population in these villages continues to increase.

ECOLOGICAL THREATS

(a) Climate change impacts on biodiversity: A report by Oxfam (2008) identified southwest Uganda as the fastest warming region in the country (0.3°C per decade). Such a temperature rise increases the likelihood of pest and disease outbreaks, which can threaten biodiversity. The predicted increase in the prevalence of forest pests and diseases will subsequently intensify forest dieback and loss of forest biodiversity, inevitably hindering forest ecosystem conservation efforts. Because of forest degradation, the climate regulatory function of forests will be reduced in the long run, thus, exacerbating impacts of climate change. Climate change also poses an indirect threat to forests as communities that live adjacent to forests search for supplementary livelihood streams to bolster what they produce from their own small parcels of land. Already, there have been encroachments into forest ecosystems to sustain livelihoods; these are in part, and in some areas of Uganda, attributed to climate change. Mountain ecosystems are already feeling the threat of climate change. These ecosystems are highly sensitive to perturbations, climatic and otherwise. Climate change is expected to result in lower elevation species moving to higher altitudes, and species at the highest altitudes are expected to disappear. The WMD cites climate change as a threat to wetlands. For instance, following the recent drought of 2004 that caused the levels of water in Lake Victoria to drop by over 1 meter, people encroached on the Lake Victoria wetland system occupying the “new” land mass that had been created.

With climate change, extreme weather events, such as floods and droughts are expected to increase. This has already affected livelihoods in eastern Uganda; the recent landslides are attributed in part to climate change. Eventually climate change may affect the habitats in which animals live and one potential adaptation mechanism is migration. However, in Uganda, where migration corridors are limited and protection within these corridors is weak, migration is expected to result in more human-wildlife conflicts, increased killing of wildlife that comes into contact with humans, and lower wildlife population numbers (See Annex J). Corridors may not provide the diversity of habitats needed for healthy populations of wildlife – they are meant to secure links among critical habitats only. Yet wildlife species may be forced into these small corridors. This could impact the wildlife tourism industry. Currently, however, this forced migration due to climate change has not yet taken place, and it is uncertain if it actually will – but there are not enough studies that provide a good understanding of the potential impacts of climate change on wildlife and wildlife habitat. Other climate change impacts are discussed in Annex F.

(b) Invasive plant and animal species, some of them exotic to Uganda, are a principal threat to Uganda’s biodiversity. Invasive plant species, including *Lantana camara*, *Broussonetia papyrifera*, *Mimosa pigra*, and *Senna* spp have invaded large areas of the Budongo and Mabira Forest Reserves. The aggressive spread of Nile perch in Lake Victoria is one reason that about 150 species of Lake Victoria’s native fish have gone extinct and the continued survival of another 40% of its fish species is severely threatened (IRG, 2006). The extinction of a species is not only a loss of biodiversity itself, but may cause the populations of other species to decline, destabilize ecosystem processes, decrease ecosystem and species resilience to

changes in climate patterns, and affect natural evolutionary processes. (This threat is discussed in greater detail in Annex J, Game-changing Threats).

(c) Widespread, frequent, and severe conflicts are occurring as a result of movements of wildlife from inside protected areas into the surround agricultural and pasture lands. Ranchers in the areas adjacent to the protected areas object to the competition for water, food, and salt that wild grazing animals give their livestock. Farmers object to the destruction that wild animals can cause to their crops both from trampling and eating. Most people in the areas adjacent to protected areas fear attacks on humans by wild animals, especially lions, hippopotamus, and elephants. These conflicts result from growth in population of both the wild animals, as controls on poaching permit their numbers to rise, and of humans, who are settling and resettling areas around the protected areas. The replacement of large areas of savannah habitat by woodland habitat has aggravated these conflicts around Murchison Falls, Queen Elizabeth, and Lake Mburo National Parks, because it has reduced the area of suitable habitat for grazing animals within the park just as their populations have grown rapidly, causing large numbers of some grazing species to move outside of the park boundaries to find food. Population growth (a root cause), E/NR governance (a root cause), and invasive plant species (also a primary threat) contribute to this threat. This game changing threat is discussed in detail and recommendations are provided in Annex J.

(d) Uncontrolled/illegal fires indiscriminately kill flora and fauna alike, especially the smaller and lower life forms that may be localized and cannot easily escape. Cropland is burned during the dry season, and because they may be poorly managed and controlled, fires jump boundaries into PAs or onto other natural areas.

(e) Insecure land tenure and land conflicts: Sustainable natural resource management and biodiversity conservation are being threatened by insecure land tenure and land conflict, particularly in areas adjacent to wildlife reserves in the Albertine Rift, where oil prospecting operations are taking place. Land speculators and land grabbers are fueling these conflicts around wildlife PAs in anticipation of increases in land values in the region that are expected to materialize when oil production and refining become a reality. Customary land owners are losing rights to lands to powerful land speculators who proceed to process land titles of large parcels of land that include land customarily owned by local communities. The land grabbing has greatly eroded incentives to conserve natural resources and biodiversity on customarily owned land in the affected areas (this is discussed in greater detail in Annex J).

Insecure land tenure and land conflict is also threatening biodiversity conservation in post-conflict northern Uganda where former internally displaced people (IDPs) are returning to their home villages. The insecurity of land tenure is leading to unsustainable resource extraction and widespread forest conversion for crop production. Shea nut trees are being cut for charcoal production in northern Uganda to supply local markets as well as external markets in south Sudan. Traditionally, these trees were protected as a source of income that could last for many generations, but with uncertain tenure (including of trees), even Shea trees are being cut down.

TRANS-BOUNDARY THREATS

The often illegal, but even legal trans-boundary trade, especially in charcoal and firewood, and in wildlife (mostly illegal) exacerbates threats to biodiversity by providing an additional market to those already existing in-country (see below). In addition, individuals cross into Uganda from neighboring countries – often with impunity – and take part in illegal activities, such as poaching, fishing, wildlife collection, timber harvesting, and fuel wood collection. The ecosystems and resources most affected by trans-boundary threats are, of course, those resources that are trans-boundary in nature: Lakes Victoria, Albert, and Edward, Mt. Rwenzori National Park, Mt. Elgon National Park, BINP, Mgahinga Gorilla National Park, and forest and wildlife PAs along the border of Uganda and South Sudan.

An example of a trans-boundary threat is illustrated by the situation between Uganda and South Sudan. On the Uganda side at Kidepo and Nimule, poaching is very much under control, but when elephants move into South Sudan they suffer heavy poaching. The adjoining PAs on the Sudan border have inadequate management infrastructure although a trans-boundary collaborative agreement was signed in 2006 at Ministerial levels. Armed pastoralists have often crossed into Uganda, into Kidepo National Park in search of pasture and water and while there engage in poaching. In 2006 and 2007 Uganda had to force pastoralists from Sudan out using military force.

5.2 ROOT CAUSES OF THE THREATS

Direct threats to biodiversity -- or the factors happening on the ground (Section 5.1) -- are driven by political, institutional, and social factors, sometimes referred to as indirect threats or “root causes.” Below, the root causes of the threats are described. The ETOA team identified possible root causes from document review and stakeholder interviews, and analyzed and synthesized findings during an internal ETOA team meeting.

1) **Political will to advocate for biodiversity conservation and to implement the comprehensive legal framework is lacking. Political interference and corruption undermine E/NR initiatives.**

As described in Section 4, the policy and legal framework for management of the E/NR sector in Uganda is relatively well-developed with fairly comprehensive policies, laws, regulations, guidelines, and plans for sound environmental management as a whole and for specific sectors such as wildlife, forestry, wetlands, fisheries, water resources, mining, and energy. However, implementation of legislation is limited. This is largely a result of political interference, lack of political will to promote biodiversity conservation over other land uses and to lobby for E/NR sector agencies (to provide them with adequate budgets, staffing, and training), and corruption. Following are some examples:

- (a) NEMA is the agency responsible for ensuring sound environmental management and biodiversity conservation within the whole country and works in conjunction with respective sector-led agencies. However, NEMA is under-funded and under-staffed and loosely operates through equally under-funded and under-staffed District Environment Departments. Therefore, it cannot ensure compliance with environmental regulations. Because NEMA staff is thin on the ground, mitigation measures (Environmental Management Plans, EMPs) are often not monitored, and enforcement of EMPs is weak. There has been a lack of advocacy at high government levels to improve NEMA’s situation.
- (b) Most developers are ensured that their project will be approved by NEMA, and if not, that NEMA’s decision will be over-ruled, so they undertake EIAs to satisfy legal requirements and pay little attention to management of adverse effects associated with their development projects. NEMA decisions can be over-ruled based on non-technical grounds, for example, as political favors. There is lack of political will to advocate for the environment over development, and politicians will readily promote development over environmental protection. In discussions with the ETOA team, interviewees noted that poor people are forced to comply with NEMA regulations, while the wealthy find their way around compliance.
- (c) A combination of political interference and corruption has weakened the effectiveness of central and local government forestry agencies. For example, NFA is mandated to protect the integrity of central forest reserves through, among others, prevention of human settlement and crop cultivation in the CFRs, but this work is constrained by Presidential Directives prohibiting NFA from evicting the settlers and crop cultivators for reasons of political expediency. In the ensuing confusion, some NFA staff solicit bribes from the settlers and crop cultivators to allow them to continue settling and farming in the CFRs.

(d) Even though hunting wildlife is legal (except in pilot cases, as discussed above) and fishing is meant to be strictly regulated, bushmeat is widely available in Uganda, and over-fishing continues in most rivers and lakes largely uncontrolled.

(e) Trans-boundary biodiversity threats are not being addressed because of the absence of effective institutional arrangements to collaboratively manage trans-boundary natural resources. While at technical levels there have been attempts to jointly address issues such as poaching and monitoring trade and illegal activities, there is little political and legal backing. For example, in 2004, UWA and the Rwandan and DRC wildlife agencies agreed to cooperate on a range of biodiversity management aspects including law enforcement, research and monitoring, tourism, and community/wildlife matters in the Virunga landscape but to-date (2011) the legal instrument to back this initiative in the form of a treaty has not been signed even though negotiations were completed and the initiative endorsed at Ministerial levels. This critical landscape could benefit from a trans-boundary initiative since several threats require trans-boundary efforts, such as fire, which in 2009 originated from Rwanda and UWA helped stop it; and poaching of mountain gorillas mainly from the DRC.

Trans-boundary initiatives are also needed to address threats on the Uganda – Kenya border (Karamoja/Turkana and Mt. Elgon areas), where there is considerable movement of people and wildlife; and on the Uganda – Tanzania border (Sango Ba and Minziro), where elephants and lions have been known to cross, especially from Tanzania to Uganda, and require cross-border protection.

Differences in environment and natural resources policies and laws of neighboring countries have hampered efforts to ensure sustainable management and conservation of trans-boundary resources. Harmonization of policies would require sustained effort from high level government officials; this is often lacking within Uganda’s as well as within neighboring countries’ wildlife agencies and line ministries.

Overall, the E/NR sector is characterized by strong policies and legislation, but a lack of political will to ensure implementation by providing adequate budgets, by promoting accountability and transparency and by abstaining from politicking.

2) E/NR government institutions are constrained by a lack of adequate budgets and in some cases, by a lack of technical capacity. This root cause is closely related to root cause #1. Following are some examples:

(a) Although UWA is a well-organized, professionally run institution, it still lacks sufficient capability to manage conflicts effectively through the use of the ecosystem approach to land, wildlife, and forest management. The ecosystem approach is based on the collection and interpretation of sound data; an assessment of a range of possible management actions to reach the desired result; and implementation of the most appropriate actions. This requires a budget for applied research and ecosystem management (related to root cause #1 above), as well as staff who are trained in this field. However, instead of managing ecosystems, including the wildlife that depends on them, UWA more often manages from conflict to conflict – this is primarily due to limited operating budgets for ecosystem management (including research to support this), and limited technical capacity in ecosystem-based approaches to PA management, and because UWA is pressured to act quickly in the face of conflicts.

(b) The Acting Director of the UWA stated to the team that “UWA’s biggest need now is for investment in internal research capabilities of UWA so that it can manage the PAs on the basis of science and fight off management on the basis of politics.” He stated also that research from universities has been of little relevance and that rangers should be involved in collecting data on the populations of wild animals. “UWA needs an initial investment in its scientific capabilities and then will be able to continue to finance research with its own funds” (Seguya, A. Acting Director, UWA, pers. comm. 2011)

(c) The former Uganda Forest Department was restructured into the present NFA, the FSSD, and the DFS, but none of these new entities has lived up to the expectations of the architects of the restructuring exercise. The three entities are under-staffed and under-funded (related to root cause #1 above), and unable to stem rampant incursions into CFRs and LFRs, let alone ensure sustainable management and conservation of forest patches on privately and communally owned lands. Technical capacity in government institutions in sustainable forest management is limited; while there are numerous, well-trained forestry professionals in Uganda, many leave government service for more promising careers in the private sector or at universities.

(d) As mentioned in Section 4, NEMA operates fairly effectively at Kampala level where the headquarters are located and staff can easily reach environmental trouble spots such as encroached wetlands, but the agency's presence upcountry is hardly felt. NEMA and District Environment Departments (NEMA's proxies at district level) are constrained by limited staff and funding

(e) Technical capacities and financial resources at district level in the E/NR sector are limited. As mentioned, District Environment Departments are unable to fulfill their responsibilities as local proxies for NEMA; District Forestry Services are under-resourced, and currently there is no representation from the WMD at district level.

3) There is a widespread perception in Uganda, including among highly learned people, politicians, and technocrats that sustainable natural resources management and biodiversity conservation are not “development” activities.

In actuality, biodiversity conservation is a development activity with short, medium, and long term economic returns. However, policy makers and similarly, peasants make decisions based on what may appear to be more immediate returns; they reduce the value of biodiversity conservation and the associated future potential benefit streams to nearly zero. Even the NDP fails to incorporate biodiversity conservation—further de-emphasizing its potential as part of the development agenda. Some examples of how this perception affects decisions that affect biodiversity conservation are:

(a) The decision made by GOU in 2007 to allow conversion of the medium altitude moist evergreen Mabira CFR into a commercial sugarcane plantation. Public outcry against the Mabira forest conversion forced Government to rescind the decision.

(b) Other forest conversions have been successful, for example on Bugala Islands where commercial oil palm plantations have replaced medium altitude moist evergreen forests. Once a mature, complex forest is converted to plantation, it could take generations to return – and in many cases, it may never come back. Ecological functions, potential economic returns, and future options are greatly narrowed once conversion has occurred.

(c) Government has also successfully converted a *Phoenix reclinata* wetland in the former Namanve CFR into a Business and Industrial Park with huge costs to the economy in terms of environmental degradation and unwarranted and costly wetland drainage infrastructure.

(d) Community Wildlife Management Areas such as Kaiso-Tonya CWMA offer considerable opportunities for development of wildlife enterprises such as sport hunting. However, community institutions meant to manage such areas are largely undeveloped or absent, leaving CWMA as practically open access resources. Rather than focusing efforts on the potential for income generation from wildlife enterprises and forming a community institution to develop and oversee the enterprise, wildlife resources are indiscriminately hunted and no long-term benefits accrue to the community.

4) There are misinterpretations of natural resources (NR) policies; NR policies are interpreted to favor production over conservation. Other NR (agriculture, energy) agencies fail to

coordinate and cooperate with their conservation counterparts; even within conservation agencies, there may be failure to coordinate because of misinterpretation of policies and roles and/or because agencies are under different ministries.

Inadequate coordination and lack of cooperation between central government and local authorities in policy implementation often lead to contradictions, confusion, and conflict in land use practices resulting in threats to biodiversity, as well as missed opportunities for collaborating on sustainable natural resources management. Some examples are described below:

(a) Agricultural agencies have interpreted policies and legislation as though they are encouraging conversion of important biodiversity habitats, such as wetlands, savanna grasslands, and forests for crop and livestock production as well as elimination of other forms of biodiversity that are considered vermin or pests. Even when it has been demonstrated that conservation complements agricultural production as evidenced in aspects of water catchment, soil stability, and fertility including pest control, misinterpretation and over-zealousness in implementation of government programs (i.e., NAADS) have largely resulted in more biodiversity habitat reduction to support increased production. As mentioned in Section 4, the issue is mainly misinterpretation of legislation in favor of production versus conservation.

(b) The conservation agencies, including UWA, NFA, NEMA, and WMD, have as yet not agreed on an effective coordination mechanism to address issues of common concern given that their mandates overlap in mission and geographical coverage. In the Albertine Rift for example, all four agencies have a role to play in regulating and monitoring economic activities such as mining, oil extraction, hydropower generation, and fishing. All are described as lead agencies, often resulting in duplication of effort or, conversely, with inadequate roles due to capacity deficiencies – limited human resources, finances, and logistics. An attempt to create a coordination mechanism in 2006-2008 was curtailed by the difficulty of rationalizing different reporting lines in different ministries and the ongoing decentralization of some services and creation of new districts.

(c) To transition from charcoal to other affordable, renewable sources of energy, close collaboration is required between government departments that are mandated to regulate the utilization of charcoal – such as the MWE and the Ministry of Energy and Mineral Development – and NGOs that are involved in the biomass energy sector. It will also require collaboration with NFA to better regulate cutting of wood, charcoal production, and sale. However, as previously mentioned, coordinating across ministries poses challenges, and to date, coordination has been minimal and not produced results.

5) There are insufficient economic incentives for sustainable forest management, avoided deforestation, and conservation including on private lands.

Significant biodiversity can still be found on privately owned land in Uganda. Poaching on private land, including in private forests is common; in part this is a livelihood response, but in part it occurs because there is no incentive to protect wildlife – income generation opportunities are not widely known or understood. Wood is collected for fuel, resulting in degradation of forest resources – sustainable forest management and potential benefits from the forest, other than for short-term uses, are largely unknown, not well understood, and are not widely available to local people who live around forested areas.

6) Uganda's high population growth rate is an underlying cause of agricultural expansion (land is sub-divided for each generation until the available landholding is unproductive) and of poorly planned residential, commercial, and industrial development. The result has been encroachment into natural areas, including forest and wildlife PAs and wetlands, demands for additional land for agriculture, increased human-wildlife conflict, and conflict over land tenure. Population growth is also an underlying cause of the increased use of charcoal.

Uganda has the second highest birthrate in the world. The population of Uganda in 2003 was estimated by the United Nations at 25,827,000, which placed it as number 40 in population among the 193 nations of the world. The estimated population in January 2010 was 32.3 million. The projected population for the year 2015 is 39,335,000 (<http://www.state.gov/r/pa/ei/bgn/2963.htm>). The population density in 2002 averaged 102 per sq km (265 per sq mi). However, population density varied from 260 per sq km (673 per sq mi) in Kabale to 14 per sq km (36 per sq mi) in the dry Karamoja plains. The northern, eastern, and western regions are less densely populated than the region along the north shore of Lake Victoria. Some of the key areas for global biodiversity – the southwestern part of Uganda, for example, have the highest population density; this is where one can clearly see the boundary of agricultural land and Uganda’s “mountain gorilla parks.” On the slopes of Mt. Elgon, pressure for productive land has resulted in shifting of the boundaries of Mt. Elgon National Park to accommodate local populations. As population grows, and people cultivate and develop areas closer to PAs, they inevitably come into contact with wildlife, and cases of human-wildlife conflict increase. In addition, and of significance to Uganda’s large mammals and primates, corridors between PAs are not formally protected, yet provide key habitat, migration routes, and ultimately help ensure genetic diversity of wildlife populations. However, given the high population growth, these corridors are being encroached on – and given the lack of a formal protection mechanism, there is currently no legal recourse. If these migration corridors (some are only a few kilometers, some are hundreds of kilometers) disappear, it could mean the disappearance of much of Uganda’s wildlife, especially large mammals that rely on corridors (e.g., chimpanzees, elephant, lion, and leopard).

In addition, the growing population requires more resources, such as charcoal for energy. Currently, there are few affordable, practical alternatives, yet the wood resource is quickly being depleted.

7) **The breakdown of common property rights and traditional resource management and dispute resolution** that resulted from prolonged stay of the population in IDP camps due to the Kony rebellion is the root cause of land conflict in northern Uganda. In the Albertine Rift, private property rights, commercial land transactions, land grabbing, and unclear boundaries of communal and privately owned lands are fueling land tenure/land conflict in the region – this is mainly a result of expectations from oil production (see Annex J).

5.3 ACTIONS NEEDED TO ADDRESS THE THREATS AND EXTENT TO WHICH USAID ACTIONS MEET THE NEEDS

The below tables show the root causes of the threats to biodiversity conservation, the actions needed to address the root causes, and the extent to which USAID is addressing the actions needed. As mentioned above, the threats are broadly grouped into threats related to human use: development, agricultural expansion, and illegal or over-exploitation (poaching/hunting, fishing, plant collection, collection of wood fuel); and threats that are ecological. Trans-boundary threats are considered in a separate category (ETOA SOW). While there certainly may be additional “actions needed,” those presented below are key – based on the findings of the ETOA team – to reduce the root causes of the threats to biodiversity.

This section responds directly to the requirements of FAA 118 and 119:

- An analysis of the actions necessary to conserve tropical forests and biodiversity; and
- The extent to which current or proposed USAID actions meet the needs.

Section 6 contains recommendations for ways in which USAID could increase the “extent to which USAID meets the needs identified,” and for measures that will increase the chance of success of USAID interventions. Recommendations are presented for cross-sectoral links and are also based on opportunities to address the needs through donor coordination, and by strengthening Development

Objective (DO) 1’s IR 1.3. Other recommendations are related to the Collaborating, Learning, and Adapting (CLA).

In addition, of the threats the ETOA team evaluated, two rose above the others as significant to biodiversity conservation in Uganda: oil sector development and land use conflict around PAs. These two significant threats are in line with the CDCS’s “game changers” – oil production and population growth.

Oil production and the ancillary development that goes along with the sector could result in large-scale landscape changes in the Albertine Rift, as well as site-specific impacts; the ETOA team evaluated this threat, root causes, and actions needed, and provides recommendations for USAID’s involvement in the oil development sector (Annex J).

Related in part to the game changer of “population growth,” the ETOA team identified land use conflicts as the second game-changing threat. This threat is evaluated in detail and recommendations are included in Annex J. The ETOA team determined that, in part, the threat can be addressed by DOI’s interventions in the tourism sector; however, that intervention leaves gaps that are not addressed by other donors or stakeholders (as mentioned above and as illustrated in Annex K), and for which USAID has a comparative advantage, as well as previous significant investment. In addition, Annex J discusses the potential for PAs to be undermined if threats are not addressed; the PAs of course are the foundation of Uganda’s tourism industry and of USAID’s IR 1.3 tourism pillar.

The ETOA team defined USAID’s *comparative advantage* in the biodiversity sector as focus areas which USAID has previously supported in Uganda, areas that USAID has had successes in, and areas that donors and GOU interviewees have pointed to as USAID’s strengths. Annex K, Table K-2 provides examples, and in general USAID’s comparative advantage covers support for: PA planning; community-based natural resources management (CBNRM); de-centralization of E/NR responsibilities, including preparation and implementation of District Environmental Action Plans; capacity strengthening of E/NR agencies; and support for civil society and E/NR advocacy.

Tables 6, 7, and 8 respond to the FAA 118 and FAA 119 requirements:

Table 6. Human Use-related Threats to Biodiversity Conservation: Root Causes, Actions Needed, and Extent to Which USAID Meets the Needs

| Drivers or root causes of the threats | Actions needed | Extent to which proposed USAID actions meet the needs |
|---|---|--|
| Currently the CDCS does not meet the actions needed to address the root cause: <i>lack of political will</i> ; but there are opportunities to meet the needs mainly through cross-sector links that are within USAID’s comparative advantage. These are described below, in Section 6, and Annex J. | | |
| <p>l) Lack of political will; there is political interference and corruption in the E/NR sector, especially at high levels of government.</p> | <p>a) Strengthen CSOs to provide oversight/watchdog role of government especially in relation to NEMA decisions on development projects; and of NFA and local management of forest reserves (CFRs and LFRs).</p> <p>b) Strengthen appropriate government bodies’ and CSOs’ capacities to lobby for adequate budget, staffing, and training to support E/NR agencies.</p> <p>c) Strengthen national E/NR agencies to be self-sustaining/self-financing.</p> <p>d) Strengthened capacity at district level to control illegal fisheries activities.</p> <p>e) Collaborative management agreements and wildlife enterprises to counter the illegal poaching of wildlife.</p> | <p>a) DO 2 will strengthen CSOs to provide oversight of government decision making; this could include oversight in the E/NR sector, including the oil sector (see Section 6, Cross-cutting links and Annex J – oil sector)</p> <p>b) DO 2 CSO strengthening could include this (see Section 6, Cross-cutting links)</p> <p>c) DO 1 oil sector pillar could include this (see Annex J, recommendations for the oil sector pillar, creation of a biodiversity offset fund)</p> <p>d) Not USAID’s comparative advantage; but this is a gap that no donor has filled. See donor coordination.</p> |

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| | f) Promote the incorporation of biodiversity conservation as a sector into the NDP; this would mean that the GOU would provide a budget for biodiversity conservation.. | e) See recommendations in Game-changing annex J. f) Not addressed; see Section 6, Recommendations-Donor Coordination |
| The CDCS does not meet the actions needed to address the root cause of <i>limited technical capacity</i> , however especially in the oil sector, it is within USAID's manageable interests and the CDCS could address the needs (see Annex J and Section 6). | | |
| 2) Limited technical capacity | <p>a) Strengthen local government capacity to engage in the E/NR sector (forestry, wildlife, fisheries, EIA); this would strengthen local oversight of E/NR decisions and implementation of legislation.</p> <p>b) Strengthen capacity of UWA to implement ecosystem management as a means of addressing conflicts.</p> <p>c) Strengthen UWA's applied research and data analysis capabilities to support ecosystem management.</p> <p>d) Strengthen NFA's capacity in sustainable forest management, including development and implementation of plans, and enforcement of legislation; and updating of the Biomass survey.</p> <p>e) Strengthen applied research and data collection in central and local FRs.</p> <p>f) Strengthen capacity of NEMA to review EIAs and monitor EMPs.</p> <p>g) Strengthen the capacity for conducting and reviewing SEAs for large-scale industrial projects such as the on-going oil exploration – soon to lead to production. As above, this is of critical importance.</p> <p>h) Strengthen capacity to monitor fisheries and to control illegal activities.</p> <p>i) Strengthen UWA capacity to control the illegal wildlife trade and to provide oversight for legal enterprises.</p> <p>j) Assist GOU to strengthen wildlife enterprises, CMAs, and the legal framework.</p> | <p>a) DO 2 will strengthen LG capacity; this could include E/NR capacity (see Section 6, Recommendations-Cross-cutting links); also see Annex J for specific recommendations on LG capacity needs to address oil sector and conflict threats. .</p> <p>b) Not addressed (see Annex J – recommendations to address the conflict threat.</p> <p>c) Not addressed (see Annex J – recommendations to address the conflict threat)</p> <p>d) Not USAID's comparative advantage; NORAD is the key donor in the forestry sector.</p> <p>e) Not USAID's comparative advantage; NORAD is the key donor in the forestry sector.</p> <p>f) This could be addressed through DOI's oil sector pillar (See Annex J). Given the oil sector threat, this is of critical importance to biodiversity conservation.</p> <p>g) This is partially addressed by NORAD and World Bank support for oil sector development. Given the significance of the oil sector threat, there is room for additional support in DOI/oil pillar (see Annex J – recommendations).</p> <p>h) Not in USAID's comparative advantage; however, this is a gap that USAID, through improved donor coordination, could lobby to have filled (see Section 6, Recommendations-Donor Coordination).</p> <p>i) Not addressed; not within USAID's comparative advantage. This is a gap in biodiversity conservation needs-see Section 6, Recommendations- Donor Coordination</p> <p>j) Not addressed, but potential to address this – See Annex J, conflict threat.</p> |
| In the tourism pillar, the CDCS in part addresses this root cause, <i>misperceptions that biodiversity conservation is not a development activity</i> ; there are opportunities to expand the extent to which USAID is addressing this. | | |
| 3) Mis-perceptions about biodiversity conservation | <p>a) <i>Practically</i> demonstrate to policy makers, peasants, and pastoralists, with results that can be seen on the ground, that sustainable NRM and biodiversity conservation are development activities with short, medium, and long term economic returns.</p> <p>b) Promote the incorporation of biodiversity conservation as a sector into the NDP.</p> | <p>a) Partially addressed by the DO 1 tourism pillar. Additional Recommendations are in Section 6.</p> <p>b) Not addressed; see Section 6, Recommendations-Donor Coordination</p> |
| The CDCS does not meet the actions needed to address the root cause, <i>misinterpretation of policies</i> ; it can best be addressed through strengthened donor coordination. | | |
| 4) Mis-interpretation of NR policies & legislation; failure | a) Support the rationalization and clear interpretations of policy and the dissemination of this information, including the need for coordination among agencies. | <p>a) Not addressed; see Section 6 recommendation for donor coordination.</p> <p>b) Not addressed; see Section 6 recommendation for donor coordination;</p> |

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| to coordinate | <p>b) Clearly define and harmonize roles and mandates of E/NR agencies, especially of conservation-focused (UWA), production-focused (agriculture agencies), and sustainable management-focused (NFA and WMD); and of MWE and the Ministry of Energy and Minerals Development and NFA to promote affordable, renewable energy, and to discourage charcoal use.</p> <p>c) Support the implementation of the new National Land Use Plan (as of January 2011, awaiting approval from cabinet). The National Land Use Plan will also have application down to district level.</p> | <p>(donors are supporting renewable, affordable energy sources).</p> <p>c) Not addressed; see Section 6 (Feed the Future recommendation)</p> |
| <p>The CDCS partially addresses this root cause of <i>insufficient economic incentives to conserve</i>: DOI's tourism pillar is intended to address this (see recommendations for CLA, Section 6); and USAID could increase the extent to which it addresses this root cause.</p> | | |
| 5) Insufficient economic incentives to conserve | <p>a) Promote "payment for ecological services," for example, for watershed management and the provision of clean water; for wetland services (flood attenuation and water purification).</p> <p>b) Promote wildlife enterprises, community-based tourism enterprises, and other community-based NRM that have the potential to generate income while helping to create advocates for sustainable NRM and biodiversity conservation.</p> <p>c) Promote sustainably collected wood fuel products to minimize the significant impact of collection for fire wood and charcoal on Uganda's forests. For example, NFA is currently piloting tree planting for charcoal production in Nakasongola District as a measure to reduce the pressure that is currently being exerted on the diminishing woodland tree resources in the area – this should be replicated in other charcoal producing areas.</p> <p>d) Promote the economic valuation of biodiversity resources and ultimately the representation of biodiversity resources in National accounts.</p> | <p>a) Not addressed, not in USAID's comparative advantage. This is a gap in biodiversity conservation needs.</p> <p>b) Partially addressed by DOI's Sustainable Tourism in the Albertine Rift (STAR) and other donors (See Section 6 and Annex J for additional recommendations and Annex K, Table K-1 for information about other donors' contribution in this area).</p> <p>c) Not addressed; not within USAID's comparative advantage, however USAID involvement in donor coordination could help promote this action (see Section 6).</p> <p>d) Not addressed; an area to be promoted in donor coordination (Section 6).</p> |
| <p>In part the "actions needed" can be addressed by DO 3 links to DO 1; there are also other opportunities to increase the extent to which USAID addresses these.</p> | | |
| 6) Population growth | <p>a) Support family planning in districts with globally, regionally, or locally significant biodiversity that could be threatened by population growth.</p> <p>b) Developments and agricultural expansion are moving closer to PAs and other natural areas; PA-community conflicts are increasing, especially human-wildlife conflicts. Support for practical, environmentally-sound human-wildlife conflict resolution is needed to address this.</p> <p>c) Support the conservation of corridors/migration routes that are key for biodiversity conservation and genetic diversity, and where human populations are encroaching. This action is of critical importance given the potential impacts from oil sector development and because of high population growth rate.</p> | <p>a) Addressed by DO 3; see Section 6, cross-cutting link.</p> <p>b) USAID will discontinue support to human/wildlife conflict mitigation, except in those instances where such work impacts their efforts to support ecotourism. In Annex J, the ETOA provides recommendations to address this "action needed" more strategically than is currently proposed.</p> <p>c) Not addressed; this is a gap in biodiversity conservation, it is an area where USAID has a comparative advantage and has already made significant investments (see Annex K – history of USAID biodiversity interventions and Annex J for recommendations-conflict threat.)</p> |
| <p>The CDCS can, in part, address this through cross-cutting links between DO 1 and DO 2, and can increase the extent to which it is addressed in the oil sector pillar.</p> | | |

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| 7) Breakdown of property rights | <p>a) Ensure that customary land owners have full rights to their land through land registration and other measures to increase their motivation for sustainable natural resource management.</p> <p>b) Restore traditional resource management and dispute resolution systems in post-conflict northern Uganda.</p> <p>c) Raise awareness in the Albertine Rift of land grabbing and the implications for local communities.</p> | <p>a) Can be addressed by DO 2 land tenure activities (see Section 6, cross-cutting links)</p> <p>b) SPRING addressed this; in part it can be addressed by DO 2 (see Section 6, cross-cutting links)</p> <p>c) This can be addressed by DOI's oil sector pillar (see Annex J for recommendations)</p> |
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2) Actions needed to address ecological threats of:

- Climate change
- Invasive plant and animal species
- Human-wildlife conflict
- Uncontrolled fires

For ecological threats, only a sub-set of the root causes mentioned above apply.

Table 7. Ecological Threats to Biodiversity Conservation: Root Causes, Actions Needed, and Extent to Which USAID Meets the Needs

| Drivers or root causes of the threats | Actions needed | Extent to which proposed USAID actions meet the needs |
|---|---|---|
| The CDCS does not meet the actions needed to address lack of political will root cause; increased donor coordination could help meet these needs. | | |
| <p>8) Lack of political will; there is political interference and corruption in the E/NR sector, especially at high levels of government.</p> <p>(Climate change)</p> | <p>a) Develop and harmonize laws and policies related to climate change and CDM.</p> | <p>a) Not addressed; USAID is addressing climate change only through livelihood adaptability (see Climate Change Annex F); other donors are addressing climate change to various degrees (see Annex K, donor activities).</p> |
| USAID in part meets the action needed related to climate change; it does not meet the other actions needed to address this root cause, however opportunities to address it are recommended. | | |
| <p>9) Limited technical capacity:</p> <p>Human-wildlife conflict</p> <p>Invasive plants and animals</p> <p>Fire</p> <p>Climate change</p> | <p>a) Strengthen UWA capacity to address human-wildlife conflict.</p> <p>b) Strengthen UWA capacity to manage invasive plant and animal species through ecosystem management (this will also address human-wildlife conflicts).</p> <p>c) Strengthen NFA and UWA capacity to manage and control fires.</p> <p>d) Integrate climate science data into the National Development Plan and other country development plans and strategies; strengthen capacity of appropriate GOU agencies to assess and monitor biodiversity impacts from climate change; and to disseminate information to appropriate E/NR</p> | <p>a) USAID will discontinue support to human/wildlife conflict mitigation, except in those instances where such work impacts their efforts to support ecotourism. In Annex J, the ETOA provides recommendations to address this "action needed" as part of the conflict threat.</p> <p>b) Not addressed (see Annex J-conflict threat; this could be part of the ecosystem-based approach)</p> <p>c) Not addressed, outside of USAID's comparative advantage. Could be addressed with USAID coordination through US Forest Service; may be addressed by NORAD</p> |

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| | agencies so mitigation can be implemented. | assistance in the forestry sector. d) Partially addressed by FTF (livelihood adaptation to CC); USAID donor coordination could promote this action needed (see Annex G-Donor Coordination) especially with Danish government, who has supported establishment of CCU and currently supports the meteorological department. |
| USAID does not meet the action needed to address the root cause, population growth. This is a gap in biodiversity conservation needs, and recommendations are included to increase the “extent to which.” | | |
| 13) Population growth | a) Support human-wildlife conflict management through practical and environmentally sound measures. | a) USAID will discontinue support to human/wildlife conflict mitigation, except in those instances where such work impacts their efforts to support ecotourism. In Annex J, the ETOA provides recommendations to address this “action needed” in a more strategic manner than is currently proposed. |

3) Actions needed to address trans-boundary threats are described in Table 8. As in Table 7, only a subset of the root causes applies to these threats; in the case of trans-boundary threats, lack of political will is the root cause of trans-boundary threats.

Table 8. Trans-boundary Threats to Biodiversity Conservation: Root Causes, Actions Needed, and Extent to Which USAID Meets the Needs

| Drivers or root causes of the threats | Actions needed | Extent to which proposed USAID actions meet the needs |
|---|---|---|
| 10) Lack of political will; there is political interference and corruption in the E/NR sector, especially at high levels of government. | a) Strengthen existing arrangements for sustainable management of trans-boundary natural resources. b) Curb the illegal (as well as legal) trade in charcoal, especially from Uganda to South Sudan. | a) and b) not addressed by USAID; not within USAID’s comparative advantage. The World Bank is supporting the Nile Basin Initiative (trans-boundary water governance). Other donors are supporting trans-boundary resource conservation in the southwest of Uganda and in the Mt. Elgon area. Trans-boundary threats to biodiversity along Uganda’s border with Sudan are not being addressed – a gap; and in general, trans-boundary trade in charcoal is not being addressed along any border. |

6. RECOMMENDATIONS TO USAID/UGANDA

Recommendations are categorized as shown below. The ETOA SOW requires that the recommendations be prioritized according to those requiring the most immediate attention. By category, the most immediate priorities are:

- A. Recommendations – Strengthening Donor Coordination and USG Inter-agency Coordination (Immediate priority, this is a recommendation that can provide a “big bang for the buck.”)
- B. Recommendations – Opportunities for Cross Sector Linkages (Immediate priority-projects are currently being designed that will require integration of cross-sector links).
- C. Recommendations – Strengthening DO 1/IR 1.3 (In addition, a detailed threats analysis and recommendations are included in Annex J for the two game-changing threats, oil sector development and PA-community conflict.) (Immediate priority-given the timeframe of the oil sector development and of the need to address the biodiversity threats)
- D. Recommendations – Mitigating Potential Environmental Impacts of the CDGS (from the 117 evaluation, Annex A) (longer-term priority, can be addressed once projects are better designed)
- E. Recommendations – Investigations for CLA (longer-term priority, can be addressed once the CDGS is in force)

Recommendations take into consideration where USAID’s comparative advantages (as described in Section 5) are likely to have the greatest impact.

Recommendations under A through D are based on “Actions Needed” and “Extent to Which.” The numbering of recommendations in those sections corresponds to their numbers in Section 5-Tables 6 and 7.)

A) Recommendations – Strengthening Donor Coordination and USG Inter-agency Coordination

As mentioned in Section 4, donors who were interviewed for this ETOA stated that the E/NR Donor Group would be stronger if there was greater participation of USAID. Based on the ETOA (Section 5 “actions needed” and “extent to which”), the following are recommended areas for which USAID could mobilize support and leverage funding through the E/NR Donor Group:

1d and 2h) Leverage donor support to the fisheries sector, a sector that has suffered from over-exploitation and inadequate management. Whereas the fisheries sector is not USAID’s comparative advantage, there are other donors (the World Bank, EU, DfID) that have a comparative advantage in the fisheries sector based on their previous support. USAID could help mobilize donors to encourage the GOU to control fishing by implementing the legal framework and by providing the resources need by the district fisheries officers so they can enforce regulations.

1f and 3b) Mobilize donors to support the incorporation of biodiversity conservation into national strategies, plans, and Uganda’s overall development agenda (the NDP).

2i) Encourage donors to lobby government to more strongly work to curtail the illegal wildlife trade, and specifically provide technical assistance for formulation of regulations and enhancement of controls and compliance through capacity building of the enforcement arms of UWA and Interpol Uganda. This could be especially important given development of the oil sector, where workers from outside Uganda will be brought in, many with no knowledge of the local wildlife, no connection to the wildlife heritage, and who will likely be unaware of the regulations against the wildlife trade. As mentioned, even now, oil sector workers are taking advantage of loopholes in the system and trading through the DRC.

4a and 4b) Because most donors simultaneously support inter-linked sectors (agriculture, forestry, environment, livestock, fisheries, mining) in Uganda, harmonization of policies and a clear definition of NR agency roles is not only important for the GOU, but also for seamless donor interventions. USAID should mobilize donors to support harmonization so that E/NR sector policies and agencies no longer work at cross purposes.

4b) Promote improved coordination among MWE, the Ministry of Energy and Minerals Development, and NFA to work together to promote affordable, renewable energy, while discouraging charcoal use.

4d) With the imminent approval of the National Land Use Plan, USAID should mobilize donors to implement interventions in line with the Plan.

5c) Collection of wood for fuel (firewood and charcoal) is a widely acknowledged problem in Uganda that affects forest conservation and biodiversity. While developing a mechanism for sustainable charcoal production is outside of USAID's manageable interest, strong donor coordination and advocacy could help encourage the support for sustainable collection and production (possibly as part of a climate change/renewable energy program, areas which receive considerable donor attention).

5c) In E/NR donor coordination, USAID should encourage the support of pilot activities that show promise in moving to more sustainable charcoal production, such as NFA's pilot tree planting for charcoal production in Nakasongola District.

5d) Leverage support for economic valuation of biodiversity resources as well as for including biodiversity valuation in national accounting.

9d) The potential impacts of climate change on biodiversity has received little attention in the development agenda. Through donor coordination, USAID could encourage donors involved in climate change to incorporate effects on biodiversity and the development of mitigation measures (e.g., to mitigate threats such as resettlement – displaced people as a result of landslides and floods have been resettled in migration corridors and dispersal/buffer zone areas for wildlife). Some of the mitigation measures may be areas for follow-on USAID support.

In addition to the above, increased participation in the E/NR donor group will allow USAID to remain apprised of two important World Bank studies mentioned in the ETOA: one on the political economy in the E/NR sector, and one on governance in the E/NR sector. These studies are intended to inform the World Bank about how to proceed in the sector given the current situation, especially concerning the governance and accountability issues at UWA and NFA, but also more broadly, covering the entire E/NR sector. The studies will also provide information to USAID on how to proceed under the CDCS; it should especially help to define USAID's relationship with UWA and NFA.

B) Recommendations – Strengthening Cross-Sector Linkages

The recommendations below are based on the analysis of the CDCS (Annex A and Tables 6 and 7).

1a) IR 2.1 should link support for strengthening of CSO advocacy to CSOs that work in the E/NR sector so that they can provide oversight for GOU activities in the oil sector (Annex J), as well as

oversight for other E/NR sector actions (e.g., NEMA decisions in general and management of Local and Central Forest Reserves.)

1b) IR 2.1 support for advocacy through civil society should strengthen CSOs' capacity to lobby for increasing the resources (human and financial) of E/NR agencies so they can implement their mandates, and so they can plan for future activities knowing that they will be budgeted for. This should be coordinated with IR 1.3.

2a) DO 2 should link with IR 1.3 to strengthen capacity of LG officers that are responsible for service delivery in the E/NR sector (for the tourism and oil sector pillar, recommendations are included in Annex J).

6a) DO 3 support for family planning should link to DO 1 so that family planning can target districts where biodiversity – as well as economic growth – is threatened by high population growth.

7a and 7b) Land registration and land dispute resolution are part of DO 2's strategy and are linked with DO 1's interest as well; DO 1 and DO 2 should link their support in this area to focus on districts where land grabbing (oil sector) is affecting land use and sustainable NRM. (See also Annex J, oil sector recommendations).

C) Recommendations – Strengthening DO 1's IR 1.3, Resource base degradation mitigated to protect future value

As mentioned in Section 5.3, the ETOA team identified two threats to biodiversity conservation (oil sector development and land use conflict around PAs) that are significant and if not addressed, Uganda's biodiversity will be at risk. The ETOA team felt that these two game-changing threats warrant a separate detailed analysis, and therefore, a discussion of them and all recommendations related to them are included in Annex J.

The following are recommendations for the CDCS's DO 1/IR 1.3 focus areas (geographic focus on the Albertine Rift; and program focus on the oil sector and on tourism):

1) The CDCS states that IR 1.3 will focus geographically on the Albertine Rift, where the recent discovery of oil could have “disastrous consequences.” The ETOA team agrees with the focus area given the current threats and USAID's comparative advantage and history of interventions in the Albertine Rift. However, if USAID decides to continue to focus on the tourism pillar (versus the land use conflicts around PAs pillar-Annex J), interventions should be expanded to other biodiverse areas that are under threat and that have eco-tourism potential. This would alleviate the potential impacts of an increased number of tourists and support infrastructure in the Albertine Rift tourist regions, and would help alleviate pressure to habituate additional gorilla groups, placing them at greater threat of contracting human diseases. It could also help provide a greater basis for conservation of less visited areas. The ETOA team suggests (based on information provided in the ETOA) that the tourism pillar could be expanded to the following landscapes, in priority order:

(a) The Mt. Elgon – Karamoja Landscape (interventions could be linked to the USAID Special Objective, Karamoja.)

(b) The Lake Victoria – Sesse Islands Landscape

Prior to implementing interventions, a more complete supply/demand/feasibility study would of course be prudent. As always, good development practices should be implemented to ensure that expectations are not raised unnecessarily.

2) The CDCS states that IR 1.3 will focus thematically on mitigating the effects of oil extraction and on boosting eco-tourism. As described in Annex J, the ETOA team agrees with the former thematic area; but recommends that the latter be expanded to address land use conflicts around PAs (which would include boosting eco-tourism). Annex J provides the foundation for this recommendation.

Prior to implementing a program that covers the revised pillar, USAID should collaborate with UWA and NFA to identify specific areas of shared interest and potential collaboration.

Table 6 identified the extent to which USAID is addressing the actions needed through the CDCS, and includes the following recommendations for STAR:

3a) To practically demonstrate benefits of biodiversity conservation, IR 1.3 should support community-based ecotourism (STAR) enterprises that tie in closely with Uganda's PAs and in close collaboration with UWA; and as part of support for STAR, IR 1.3 should facilitate creation and strengthening of grassroots based CWMA Associations and should assist these associations to prepare resource management and business plans. Associations of CWMA are an existing mechanism that can bring together many CWMA, and that could scale up community advocacy for biodiversity conservation.

5b) Wildlife enterprises have been successful in promoting conservation of wildlife and in discouraging poaching. As part of USAID's DO1-tourism pillar, wildlife enterprises through collaborative management agreements should be supported. This could be undertaken as a GDA or it could be integrated into the DO1 tourism pillar.

D) Recommendations – CLA Investigations

1) There is an assumption that community-based eco-tourism (i.e., as implemented by STAR) will benefit biodiversity conservation. This assumption should be tested as part of the CLA methodology. This investigation could be expanded to assess the links between CBNRM, NR-based enterprises, and other income generating activities and their impact on biodiversity conservation. Many of USAID's previous interventions have assumed a strong link. This assumption could be tested by the CLA methodology.

2) DO 1's Feed the Future (FTF) aims to intensify agriculture and not result in the expansion of agricultural land into natural areas of biodiversity importance. The CLA methodology could be used to test this: is FTF resulting in intensification versus expansion; is FTF having direct benefits on biodiversity by actually this stemming conversion?

3) Implementation of recommendations in this ETOA should be tracked on an ongoing basis and lessons learned for the next ETOA should be developed *prior to* developing the SOW.

E) Recommendations – Mitigating Potential Environmental Impacts of the CDCS

The below are recommended based on the evaluation of the CDCS in Annex A.

1) DO 1/Feed the Future

IR 1.1 may promote the use of inputs such as pesticides and fertilizers, and could involve construction of simple irrigation systems. These must be evaluated in IEEs and Pesticide Evaluation Report-Safe Use Action Plans (PERSUAPs), as appropriate, and mitigation measures must be incorporated.

IR 1.2 will likely result in increased use of pesticides and chemical fertilizers, which could result in environmental impacts and threaten biodiversity. This activity must comply with an IEE and PERSUAP, which must be approved prior to providing support for the use or procurement of pesticides. The PERSUAP will identify pesticides that are lowest risk and that will be promoted within an approved Safe Use Action Plan (SUAP); the intention of the SUAP is to ensure that pesticide users are trained in safe use practices to protect human health and the environment.

IR 1.2 could promote the introduction of GMOs. Prior to introduction of GMOs, USAID must comply with the relevant ADS, and the USAID/Africa Bureau Environmental Officer must approve the proposed introduction of GMOs.

IR 1.2 could construct irrigation systems, and expand land under irrigated agriculture. Depending on the type, the location, and the extent of the irrigation system, a variety of environmental impacts could result (and climate change could exacerbate them), such as salinization, siltation, and decreasing the water available for other purposes, including ecosystem purposes. Potential impacts must be evaluated on a site-specific basis and mitigation must be developed accordingly.

IR 1.2 component 3, Partnership Investment Development Fund could have environmental impacts and each public-private partnership should be evaluated separately in an IEE to identify impacts and mitigation.

Feed the Future Overall Program-level Mitigation Measures:

(a) Feed the Future should consider adding an additional component on land use and geographic information system (GIS), which would assist the GOU and districts to implement and comply with district level land use plans, especially as they apply to the agriculture sector, and incorporate and update GIS to ensure real time tracking of land uses. The land use plan (at district level) can be the basis of planning FTF interventions and monitoring them, as well as of monitoring expansion of land under agriculture.

(b) Intensification versus expansion of land under agriculture could be an area of investigation for CLA (as mentioned above). The district level land use plans and GIS could be integrated into the investigation to determine not only if expansion is occurring, but whether it can be attributed to the FTF production component, and the program should then be adapted accordingly. .

2) DO 1/IR 1.3, Resource base degradation mitigated to protect future value

(a) Unless GOU policies and USAID aims are harmonized, boosting eco-tourism could have unintended consequences such as: GOU could decide to habituate additional mountain gorilla groups when it may not be in the best interests of the mountain gorillas; GOU could decide to rehabilitate or construct roads in areas that are best left unopened. USAID should coordinate closely and regularly with GOU agencies to ensure that intentions for eco-tourism are harmonized; and that USAID's actions to boost eco-tourism does not have unintended consequences.

(b) Best practices in sustainable/eco-tourism should be incorporated at all levels and in all activities to help ensure that increased tourist numbers and additional attractions and facilities have no adverse effect on ecosystems, individual wildlife species, vegetation, and local culture.

(c) USAID's Environmental Procedures (including Environmental Guidelines for Small-Scale Activities in Africa) must be followed and mitigation for infrastructure construction and other activities that may adversely impact the environment must be incorporated into project plans.

(d) Eco-tourism activities should be integrated with environmental education activities for tourists to ensure that they do not participate or facilitate illegal activities such as purchase of wildlife products, purchase of wood products that are illegally sourced, and consumption of bush meat.

3) DO 3/Health care waste and expired medicines

(a) USAID could play a role in providing technical assistance and advocating for establishing adequate and cost effective national technology and systems for final disposal/destruction of expired medicines and other health commodities that require specialized equipment and procedures. [One existing USAID

implementing partner has this type of expertise: USAID has funded AIDSTAR-One to train IPs to develop and implement health care waste management processes and work with the Ministry of Health (MoH) level to strengthen policy on health care waste management, and they recently assisted the MOH to do a rapid quantification of the volumes of expired medicines stored throughout the country that the MOH used to request finances for the collection and destruction of these items.]

(b) USAID could support training in handling of expired medications, which is needed at all levels – district, stores, ministry, etc.

4) DO 3/Provision of insecticide treated nets (ITNs)

As mitigation, DO 3 should identify a process to collect, dispose, recycle, or otherwise help ensure ITNs are safely handled after they are used for malaria control. Although DO 3 is not solely responsible, this proposed mitigation measure is low cost (technical assistance to develop and promote the process) and with the large number of ITNs in the country, it is widely acknowledged that a plan should be in place for safe handling.

5) Special Objective One: Karamoja

When this program is more fully designed, an IEE will be needed which will evaluate potential environmental impacts of water catchment construction as well as other proposed activities.

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ANNEX A – FAA 117 ANALYSIS OF THE COUNTRY DEVELOPMENT COOPERATION STRATEGY

According to FAA Section 117 “Environment and Natural Resources,” it is mandatory for operating units to implement their programs with an aim to maintain (and restore) natural resources upon which economic growth depends, and to consider the impact of their activities on the environment. At the USAID strategy level, FAA 117 may be applied to provide an early stage review of potential environmental impacts at strategy level so that mitigation can be included in strategy design. The early stage review also allows crosscutting linkages between the E/NR sector and other USAID development objectives (DO) to be strengthened. The below discussion provides this early stage, strategy level review. This does not preclude the need for Initial Environmental Examinations (IEE) at DO or project level.

1. Brief Summary of the Country Development Cooperation Strategy (CDCS)

USAID/Uganda’s five-year CDCS is supportive of the Government of Uganda’s National Development Plan 2010/11-2014/15, which lays out national priorities and implementation strategies. The overall Goal Statement of the USAID/Uganda CDCS is:

Uganda’s transition to a modern and prosperous country accelerated

This Goal Statement derives from Uganda’s National Development Plan (NDP), which states that the GOU’s vision is:

A transformed Ugandan society from a peasant to a modern and prosperous country within 30 years

The CDCS makes a number of strategic choices. Among them are choices that could affect – positively and negatively – biodiversity conservation and the environment:

- Democracy and governance resources will be focused on local government (LG), the key to service delivery.

LGs are key to service delivery in the E/NR sector, and as the ETOA points out, are constrained by limited capacity and funds, and by a variety of governance issues, including the relationship between LG and central government in the management and decision-making in the use of biodiversity and other natural resources.

- Feed the Future (FTF) is the centerpiece of DO 1.

FTF intends to intensify farming – production will be aimed at improving good agricultural practices (which will include promotion of inputs such as pesticides and chemical fertilizer) and

increasing quality of commodities rather than increasing land under agriculture (implications for the environment are discussed under DO 1).

- The focus is on game-changing trends – population growth and oil production.

The ETOA team has identified population growth as a root cause of threats to biodiversity conservation, and oil production is a key threat to biodiversity.

- Food for Peace (FFP) resources will be moved from the North to Karamoja.

The ETOA team includes a recommendation for use of funds in Karamoja.

- Use Collaborating, Learning, and Adapting (CLA) methodology to make a living strategy.

The ETOA promotes the CLA methodology to evaluate and adapt the E/NR portfolio and as well as its linkages to other sectors (USAID DOs).

Three DOs and one Special Objective (SpO) are designed to help Uganda avoid pitfalls that could derail the GOU's goal, while aiming to increase prosperity. These objectives are briefly described below. A brief assessment of potential environmental impacts and cross-sector linkages to the E/NR portfolio follows the summary of each DO. The assessment is at the strategy level. As necessary, DO-level or project-level IEEs will be conducted to assess environmental impacts once details on specific activities become available. Recommendations emanating from this discussion are included in the ETOA Recommendations (Section 6).

Development Objective #1: Economic Growth

DO 1 Result: *Economic growth from agriculture and the natural resource base expanded in selected areas and population groups*

DO 1 will work in 40-50 districts across the country. NRM activities will specifically target the Albertine Rift and Uganda's PAs, as prioritized by the GOU for eco-tourism. The DO will target producers and other value chain (VC) actors in the coffee, maize, and beans VCs. This DO recognizes that a growth strategy that does not protect Uganda's most valuable asset – its natural resources – is not sustainable and will eventually lead to economic decline. The DO also recognizes that, "in a society where an overwhelming majority earns their livelihoods in the agriculture sector, adapting to climate change and managing natural resources are critical for success in the sector."

Under DO 1 the following Intermediate Results (IRs) will be achieved:

IR 1.1 Socio-economic and nutritional status of vulnerable groups improved: This IR implements a flagship program, the Community Connector, which will integrate vulnerable households with the modern economy and transition them from subsistence production. Community Connector targets communities with the highest levels of malnutrition and poverty, and aims to increase incomes, improve nutrition, and empower women and children/youth through community-based interventions.

IR 1.2 Increased incomes led by strategic value chains in selected populations: FTF resources target coffee, beans, and maize VCs. Importantly, this program is using a different approach than in the past, when interventions focused on productivity and marketing down to grassroots level, striving to increase market efficiency. Previously, many commodities were targeted, but only specific links along each VC were strengthened. The new FTF strategy implements a comprehensive VC approach, targeting three key commodities chosen based on potential for impact on income, nutrition, and food security.

The FTF program will play a major role in the USAID/Uganda portfolio; FTF components are described below:

(1) *Agricultural Research*: Support for public and private institutions performing research to protect banana and cassava from disease; breed maize, beans, coffee to increase stress tolerance and disease resistance; and scale up research and adoption of vitamin-enriched staples (This component covers commodities other than the FTF targets.)

(2) *Policy and Enabling Environment*: Support for selected policy and enabling environment initiatives to harmonize trade policies and standards and support the enactment of the Food and Nutrition Bill to create a National Nutrition Council.

(3) *Partnership Investment Development Fund*: Create a Public/Private Partnership fund to leverage private sector resources, ideas and technologies for replicable, sustainable and scaleable sector-wide impact.

(4) *Capacity Building*: Strengthen key public and private sector institutions at the national and district level and linkages between the agencies in their efforts to monitor and evaluate progress in agriculture and nutrition through collection and analysis of statistics.

(5) *Value Chain Production and Market Linkages*: A partnership between USAID and the Danish International Development Agency (DANIDA) that focuses on increasing production along strategic VCs (maize, beans, and coffee), improving market linkages, expanding financial services supporting the agriculture sector, and supporting trade related sanitary and phyto-sanitary standards and quality management systems. Through this component, USAID will support production at grassroots level.

(6) *Agro-input Supplies*: Focus on developing the agriculture inputs market in Uganda with the goal of increasing the quality, availability, and use of inputs. The program will work closely with major stakeholders, including the Uganda National Agriculture Input Dealers Association (UNADA) and private-sector stockists.

(7) *Producer Organization-Farm Level Aggregation Development*: Work with smaller farmers and organizations to benefit from the wholesale purchase of inputs, access to finance and bulking, cleaning and processing farm products – emphasizing linkages to World Food Program and international buyers through the Uganda Commodity Exchange.

(8) *Market Information Systems*: Use information and communications technology innovations to address a range of areas from enriching the agricultural information base and disseminating information to pilot testing agricultural finance applications.

(9) *Climate change adaptation funds* will be used to support the above activities, as appropriate. For example, research activities will continue to support the development of drought-resistant varieties and help farmers learn coping techniques.

IR 1.3 Resource base degradation mitigated to protect future value: USAID will focus on mitigating the effects of oil extraction and boosting eco-tourism, while continuing to support GOU institutions to preserve the country's valuable natural resources. In the oil sector, USAID will implement a "whole-of-government" approach including State Department and its Energy Governance and Capacity Initiative, Treasury, with on-site revenue advisors, and with USAID focused on environmental implications under this IR.

Potential environmental threats and opportunities: As the CDCS states, "...expansion of areas under agricultural production...pose[s] serious threats to the natural resource base." The ETOA team also notes this threat in the body of the report (Section 4). Because of poor agricultural practices and the high population growth rate, which results in land being divided into smaller, unproductive parcels, incursions into protected areas (PAs) result, and there are demands from communities to turn over land in PAs. DO 1 aims to transition Uganda's economy from one of subsistence to commercial agriculture (IRs 1.1

and 1.2). But in so doing, the CDCS acknowledges that the most vulnerable will continue to practice subsistence agriculture and will need special assistance to ensure food security while at the same time transitioning towards commercial agricultural production (IR 1.1). The intention is that commercializing agriculture will result in a new universe of jobs, many available for unskilled workers, but entrepreneurs and the more educated will also find their skills are required.

If this strategy is successful, DO 1, and specifically, IRs 1.1 and 1.2, can have positive effects on the environment, especially on areas important for biodiversity. If the GOU's vision is to be achieved, the transformation from "a peasant to a modern and prosperous country," the agriculture sector, the top priority of the NDP, will need to grow (the sector's growth has been well below overall GDP in 2007-2009.) Growth in the agriculture sector will not come from continued support for subsistence agriculture, but from a transition to commercial agriculture. This transition – although the timeframe for results could be long – could eventually mitigate the impact of subsistence farmers' demand for more land, which is largely satisfied by parceling out forest land and wetlands.

However, transitioning from subsistence to commercial agriculture can have both positive and negative effects on the environment. According to Stockbridge (2006) in a report for the World Bank, assuming that rapid population growth and the associated growth in the demand for food are unavoidable, the lack of commercialization in agricultural production (rather than the presence of it) is perhaps the biggest threat to the environment in Sub-Saharan Africa. Stockbridge provides the following examples: (1) maize production, where commercially produced hybrid maize causes less soil erosion than low yielding varieties; (2) sorghum, millet, and cassava, often grown as subsistence crops in some of the world's poorest regions, where the lack of inputs and modern technologies are causing most of the environmental problems, for example, fallow periods are being shortened and cultivation is spreading into increasingly marginal areas where soils are especially fragile and vulnerable to erosion; and (3) a study in Malawi showed that where fertilizers are not used, cassava production often expanded to areas that were of high biodiversity value. Stockbridge concludes that "one should also not forget that by increasing the yields of staple food crops the green revolutions of the 20th century reduced the pressure to convert natural habitats into agricultural land. This inevitably came at some environmental cost, but arguably a lower one, than might have been borne if the green revolution had not taken place."

On the other hand, there are of course environmental problems associated with excessive fertilizer use and pesticide use in many intensive production systems. Irrigation that often accompanies intensive farming can also threaten biodiversity and result in environmental impacts. Dams used to control and store water can result in the buildup of silt behind them, preventing nutrients from flowing downstream; and salinization of cropland can occur, reducing soil fertility and can ultimately lead to the abandonment of agricultural land – and the conversion of land to agricultural production. In addition, irrigation places demands on water resources and competes with alternative uses – domestic, commercial, and ecosystem uses. If irrigation water is not well managed, it can result in significant waste of water. With climate change and the changing rainfall patterns, irrigation becomes more important for crop growing, yet water availability for ecosystem and other purposes also becomes more tenuous. Commercialized agriculture can also result in expansion of land under agriculture, as was recently illustrated in Uganda by the attempt to convert Mabira Forest into sugar plantation, and as can be seen on Sesse Islands where commercial oil palm plantations resulted in deforestation.

Trends in Uganda indicate that land scarcity is becoming more common (NEMA, 2007). Projections by district suggest that Uganda will be depleted of land available for farmers by around 2022 (Jorgensen, 2006 in NEMA, 2007). The State of the Environment Report attributes this to low farm productivity and cites the need to encourage technologies that improve productivity. Without such interventions, there will certainly be increased demands for land, and increased incursions into PAs to convert land to

agriculture. FTF interventions can – and intend to – introduce such technologies. However, as stated above, both positive and negative effects could result; mitigation is needed to minimize negative impacts.

The State of the Environment Report (2007) recommends implementation of the (at that time – draft) Land Use Policy and Plan and the District level Land Use Policies/Plans that are a part of the national level policy to help ensure that interventions that aim to improve agricultural productivity take into account site-specific needs (soil fertility, water availability, and even cultural-historical aspects, etc). In this way, environmental conditions can be considered, and practices that lead to land clearing can be targeted and can be mitigated. While the ETOA team was in Uganda, the National Land Use Plan advanced in Parliament, but had not yet come into force. Developing interventions based on district level land use plans could help minimize the potential of land conversion (this is included in the recommendations in Section 6). Up-to-date and accurate GIS (geographical information system) must be part of the land use plan to keep it a “living,” useful plan.

Additional potential environmental impacts are briefly described below by FTF component (IR 1.2). This does not substitute for a full IEE (and possibly an EA) and a Pesticide Evaluation Report-Safe Use Action Plan.

(1) *Agricultural Research*: Could promote the introduction of genetically modified organisms (GMOs). See Section 6 for mitigation.

(2) *Policy and Enabling Environment*: No direct environmental impacts anticipated.

(3) *Partnership Investment Development Fund*: Could have environmental impacts and each public-private partnership should be evaluated separately to identify impacts and mitigation (see Section 6).

(4) *Capacity Building*: No direct environmental impacts anticipated.

(5) *Value Chain Production and Market Linkages*; (6) *Agro-input Supplies*; and (7) *Producer Organization-Farm Level Aggregation Development*: These will likely result in increased use of pesticides and chemical fertilizers, which could result in environmental impacts and threaten biodiversity. See Section 6 for mitigation. In addition, components 5 and 7 could involve construction of irrigation systems; these will require site-specific environmental review to determine potential environmental impacts and mitigation (see Section 6).

(8) *Market Information Systems*: No direct environmental impacts anticipated.

(9) *Climate Change Adaptation*: No direct environmental impacts anticipated.

IR 1.1 includes a range of possible interventions, many of which are not expected to have environmental impacts. However, as above, where there may be support for the use or procurement of pesticides, where fertilizer may be encouraged, where irrigation systems may be constructed, an IEE would provide site-specific assessment and mitigation.

IR 1.3 is expected to mitigate threats to biodiversity by mitigating effects of oil extraction and boosting eco-tourism. The threat of oil sector development is discussed in Annex J, and recommendations are provided for strengthening USAID’s interventions.

Boosting eco-tourism could have negative environmental impacts. As described in the ETOA, there is pressure to habituate additional mountain gorilla groups. But this could put them at risk of contracting human diseases, and the already fragile population could be decimated.

Additionally, boosting eco-tourism could have spin-off effects including construction or upgrading of roads that could have direct impacts on the environment and indirect – the roads could open up

previously inaccessible areas for development or for illegal activities such as harvesting wood and hunting wildlife.

Public-private partnerships, as promoted by STAR, and which would likely be promoted under the CDCS tourism pillar, could result in additional lodges and other tourism infrastructure. This could have direct impacts on the environment from construction and operation – water use will increase, there will be a need for sewage treatment, and construction of infrastructure could impact landscapes, ecosystems, and may conflict with other land uses.

The additional tourists could have an effect on animal behaviors and could trample vegetation; they may purchase handicrafts that are made with wood that is illegally sourced. There are numerous potential direct and indirect environmental impacts, positive and negative impacts that could result from boosting eco-tourism; mitigation for potential adverse effects is recommended in Section 6.

Section 5 discusses IR 1.3 in regard to “the extent to which USAID actions meet the needs” for biodiversity conservation identified in the ETOA.

Cross-sector linkages: Strengthening a cross-sectoral link between IRs 1.1 and 1.2 (agriculture sector) and IR 1.3 (E/NR/biodiversity sector) could ensure that IRs 1.1 and 1.2 are resulting in intensification rather than expansion of cropland, and that there are fewer incursions into areas that are important for biodiversity (PAs, including NFA and LG forests, private forests, wetlands) – that good practices are resulting in intensification and not expansion (and importantly, that USAID funds are not contributing to practices that result in the degradation or destruction of biodiversity). See Section 6 for a recommendation for *Collaborating, Learning, and Adapting* (CLA) function.

Development Objective #2: Democracy and Governance

DO 2 Result: *Democracy and governance systems strengthened and made more accountable*

Geographically, this DO will overlap with districts where the Health and Economic Growth portfolios are working. However, the DO will also work with national level institutions, such as Parliament.

IR 2.1 Political processes more accountable and participatory: Under this IR, USAID will implement activities to increase constructive engagement between communities and their government through CSOs and relevant parliamentary committees and members of Parliament so that government can more effectively meet the needs of its constituents. Advocacy by civil society will be a key component of this IR.

IR 2.2 Enabling environment improved for service delivery: USAID will assist LGs to strengthen a foundation for improved service delivery; will improve transparency in budgeting and planning; and will enhance the enabling environment for land management and administration, such as strengthening district land boards and raising awareness of land rights.

IR2.3 Peace building and conflict mitigation strengthened: This IR will address conflict mitigation through programming aimed at reducing conflict triggered by land, ethnic, and cultural background, oil, and by promoting peace gains in the LRA affected areas. Particular focus will be on strengthening peaceful resolution of land conflict in selected districts.

Potential environmental threats and opportunities: DO 2 poses no potential threats to biodiversity, tropical forests, or the environment.

Cross-sector linkages: In the E/NR sector, land tenure/land conflict is considered a root cause of biodiversity threats (see Section 5); this is especially significant in the Albertine Rift, where land-grabbing is now common in anticipation of oil sector developments. IR 2.2 Strengthening district land boards and

IR 2.3 reducing conflicts over land should be linked to IR 1.3's oil sector pillar (this is included in Annex J, recommendations for the oil sector pillar).

IR 2.1 can contribute to IR 1.3's oil sector interventions. IR 2.1's support for advocacy through civil society to provide constructive oversight to local government could be integrated into the ETOA's recommendations for DO 1 interventions in the oil sector. This is included in Annex J.

Development Objective #3: Health and Nutrition

DO3 Result: *Improved health and nutrition status in focus areas and population groups*

DO3 is comprised of one IR supported by four sub-IRs and four lower level results that serve as essential building blocks.

IR3.1 More effective use of sustainable health services: The underlying hypothesis of this IR is that effective use of sustainable health services will result in improved health outcomes. This IR is supported by the following:

IR 3.1.1 Health seeking behavior increased: This supports an individual's or community's ability to make healthy choices, and involves continuing health education, behavior change communication, and addressing underlying social and cultural norms to help develop a sense of responsibility for good health seeking behaviors.

IR 3.1.2 Improve quality of health services: USAID will build GOU, private sector, and civil society ability to provide quality services by promoting and adhering to standards, procedures and norms for services. This includes accreditation of public and private sector health facilities.

IR 3.1.3 Increased availability of health services: This IR will increase the availability of targeted services provided by the public and private sectors.

IR 3.1.4 Increased accessibility of health services: This will build public health sector capacity to foster customer friendly policies that focus on youth and gender and will also focus on ease of access to services.

Lower level results are: improved literacy; increased availability of resources for health care; enhanced enabling environment for health care; and improved organization and management.

Potential environmental threats and opportunities: DO 3 will result in greater demand for and provision of improved health services. This could include provision of health commodities such as medicines, laboratory reagents, and other health supplies. In addition, health commodities have been and will continue to be distributed through Global Health projects. The supply chain is complex, and USAID is only one actor involved in the chain, and only one donor of many who are responsible for bringing pharmaceuticals into the country. However, in general, the increased availability of medicines and other health supplies in Uganda has generated large volumes of health care waste that can pose a hazard to human health and the environment if not handled properly. Many health facilities lack the necessary knowledge or facilities to safely dispose of the waste, which includes many tons of expired medicines being stored across the country (a recent estimate is that there is an average of five tons/district that has reported) because the country currently lacks sufficient incinerator capacity and funding to dispose of the huge volumes of expired medicines.

The concern for the environment and biodiversity, in particular, is that expired drugs and other medical waste could be disposed of in an unsafe manner – directly into waterways or on land, where they could end up in waterways. While this is illegal in Uganda, as long as the medical waste is not safely disposed of, it remains a risk to biodiversity. Improper disposal of pharmaceuticals can have detrimental effects

on wildlife – many pharmaceuticals act as endocrine disruptors – they can wreak havoc with an animal's endocrine system, impact reproductive success, and can cause outright poisoning.

Draft guidelines specifically for disposal of expired medicines have been recently drafted but need to be officially finalized and circulated. The National Drug Authority (NDA) and licensed private service providers are now certified to destroy medicines – there is agreement on how the medicines should be disposed of; the process of collecting the medicines needs to be better formulated and capacity needs to be built so the process can be implemented. Training in handling of expired medications in particular is needed at all levels – district, stores, ministry, etc. – and most importantly sufficient funding allocated for the destruction of both historical and new waste is needed.

The \$40 million USAID project *SURE* is working with the Ministry of Health, other national and local government entities to rationalize product selection, procurement, and distribution of essential medicines and health supplies to improve availability of health commodities in health facilities and to ensure best value in utilization of limited resources. These efforts should contribute to future reduction of expired medicines, and can be considered a form of mitigation.

See Section 6 for recommended mitigation measures aimed at safe handling and disposal of expired.

As above for expired medicines, increased services could likely result in an increase in health care waste (HCW). HCW can pose a threat to the environment in several ways – fish and wildlife can be injured by sharps, could be poisoned through consumption of waste, aquatic systems could be contaminated.

Policy and procedures for the safe handling and disposal of general HCW are available and the USAID *AIDSTAR-One* project is playing a key role in national advocacy efforts and training of health workers and improving methods of disposal of health care waste at hospitals and lower level facilities. This project can be considered as mitigation.

There are several policies, regulations, procedures, and guidance documents that cover medical waste disposal, and as with all GOU regulations, USAID must comply with these. Examples of two pieces of legislation that cover medical waste disposal are:

- (a) The National Policy on Injection Safety and Health Care Waste Management (2004) aims at ensuring safe injection practices and proper management of healthcare waste through appropriate procurement, distribution, and monitoring of equipment and supplies and increased awareness.
- (b) The National Environment Waste Management Regulations (1999) require waste, including medical waste, to be disposed of in a way that would not harm water, soil, air, or public health. These regulations also state that waste haulage and disposal must be done by licensed entities.

One way that USAID ensures compliance with GOU legislation is to ensure that all USAID IPs have a HCWM health care waste management component and plan. *AIDSTAR-One* assists IPs to develop these, budget for them, and trains to implement them. In line with GOU requirements, *AIDSTAR-One* has developed waste management guidelines (best practices), and *AIDSTAR* monitors implementation of them and IP awareness. Dr. Masembe (pers. comms., January 2011) of USAID-funded *AIDSTAR-One* stated that there are many options for final disposal of HCWM, and these are known. There are also commercial service providers in Uganda who will provide safe and environmentally sound disposal of HCW. See Section 6 for recommended mitigation.

Provision of insecticide treated nets (ITNs) could threaten biodiversity if ITNs are disposed of in waterways or on land where they could become entangled in fish or wildlife; they may be used as fishing nets, which result in catching fish of all sizes – an unsustainable and environmentally unsound practice.

Although DO 3 only assists in distribution, the DO can claim some responsibility for disposal practices. See Section 6 for recommended mitigation.

Although DO 3 is not solely responsible, this proposed mitigation measure is low cost (technical assistance to develop and promote the process) and with the large number of ITNs in the country, it is widely acknowledged that a plan should be in place for safe handling.

DO 3's indoor residual spraying (IRS) program involves use of pesticides for mosquito control. This program is covered by an IEE and PERSUAP which is monitored and reported on, and the PERSUAP is updated as needed.

See Section 6 recommendation on cross-sectoral linkages (DO 3 and DO 1 should collaborate in family planning programs so that family planning is implemented in districts where population growth is a threat to biodiversity.)

Special Objective One: Karamoja

This SpO is comprised of two IRs:

IR 4.1 Infrastructure and livelihoods options improved. USAID will support a UNDP program that provides local district development grants using host country systems. It will build water catchments that serve as watering points for livestock between different clans thus promoting peace as well as providing infrastructure for livelihoods.

IR 4.2 Infrastructure for peace and security strengthened. This IR supports police training, Uganda Peoples Defense Force (UPDF) training, and the strengthening of local civilian governmental systems. FFP resources now targeted to the North will be redirected to Karamoja.

Potential environmental threats and opportunities: Water catchments should be constructed in an environmentally sound manner in accordance with best practice. See Section 6 for recommended mitigation.

When this program is more fully designed, an IEE will be needed which will evaluate potential environmental impacts of water catchment construction as well as other proposed activities.

Cross-sector linkages: This program could link to IR 1.3 and should consider expanding into the tourism sector as a means to conserve the rich biodiversity of Karamoja as well as to promote peace and to provide infrastructure for livelihoods. Section 6 includes such a recommendation.

ANNEX B – SCOPE OF WORK FOR THE ASSESSMENT TEAM

WORK ORDER No. #__

INDEPENDENT CONTRACTOR NAME: Karen Menczer

| Part I – Contract Data | |
|--|---|
| Prime Contract Number: | EPP-I-00-03-00013-00 |
| Task Order Number: | 11 |
| Project Title: | Env. Sound Design and Management Support to Africa |
| IRG Project Number: | 3017-000 |
| Period of Performance: | November 28, 2010 – February 28, 2011 |
| Hours (workdays) ordered not-to-exceed: Six-day workweek in the field authorized? | 30 days <u>maximum</u> . Suggested distribution of LOE: 18 days of field work, 5 days of writing/wrap-up, and 4 days of travel. [X] Yes [] No |
| Authorized Contract Labor Category: (<u>Required</u> for all Labor Schedule Contracts) | International Senior Natural Resources Team Leader (See III.1 below for position description) |
| IRG Project Manager: | Todd Johnson |

Part II - Introduction and Objectives

OBJECTIVE

To conduct a country-wide assessment of biodiversity and tropical forestry conservation needs and related issues for the purposes of complying with Sections 117, 118, and 119 of the Foreign Assistance Act of 1961, as amended, and Agency guidance on country strategy development, under ADS 201.3.9.1, ADS 201.3.9.2, and ADS 204. Based on this needs assessment, provide analysis of proposed actions under USAID/Uganda’s new strategy to identify how it contributes to the conservation needs identified. This Environmental Threats and Opportunity Assessment (ETOA) will also inform USAID/Uganda strategic planning, and provide a primary level of analysis on relevant proposed areas of programming, as well as address current Administrative and Congressional priorities, foremost, food insecurity, water resources management, global climate change and global health.

Congress recognized the importance of biological diversity as the foundation of all sustainable development, and as critical to support, not burden, USAID programs. The ETOA is developed as a tool for not only informing the strategy development process, but is valuable throughout its full implementation. It assists in the identification of possible environmental compliance issues (positive and negative) associated with newly designed programmatic activities, as well as opportunities for innovative use of earmarked funding (especially for biodiversity and tropical forestry conservation), and increased sustainability across development sectors. In alignment with USAID August 2010 operational reform priorities, and more recent Presidential Global Development Policy priorities, this ETOA will help foster USAID/Uganda's capacity to "achieve high-impact development and make smart use of our limited resources", supporting our leadership role in building and delivering development assistance excellence.

BACKGROUND

A. Policies Governing Environmental Procedures

USAID environmental compliance is directed by U.S. policy and law. The Foreign Assistance Act (FAA) of 1961, Section 117, requires that the President take fully into account the impact of foreign assistance programs and projects on environment and natural resources (Section 117 (c)(1)).

Section 118 states that each country development strategy statement or other country plan prepared by the U.S. Agency for International Development shall include an analysis of (1) the actions necessary in that country to achieve conservation and sustainable management of tropical forests, and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

Section 119 of the FAA relates to Endangered Species. It states that "the preservation of animal and plant species through the regulation of the hunting and trade in endangered species, through limitations on the pollution of natural ecosystems and through the protection of wildlife habitats should be an important objective of the United States development assistance" (FAA, Sec. 119 (a)). Furthermore it states, "Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of (1) the actions necessary in that country to conserve biological diversity and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified" (FAA, Sec. 119 (d)).

USAID/Uganda is currently in the process of developing a new Country Development Cooperation Strategy for its assistance program to Uganda. To be in compliance with above, and for USAID Missions to effectively determine potential threats and opportunities associated with the management of natural resources and environmental factors, an assessment is needed to inform Mission Planning. The purpose of this Task Order is to provide USAID/Uganda and the Government of Uganda with information and analysis to help achieve broad-based, inclusive economic growth and participatory democratic governance.

The last USAID/Uganda ETOA was conducted in 2001, subsequently followed by a 118/119 Biodiversity and Tropical Forest Assessment completed in July 2006. Since then there have been a number of significant developments in Uganda, particularly the return to peace in 2006, which led to the reopening of Northern Uganda for development, and the discovery of oil reserves in the west, that require a wider assessment to be conducted. As such, there is a need to both update the 2006 report, as well as perform a wider assessment to address the expanded scope in programmatic and Presidential priorities. Additionally, the assessment will examine potential challenges and opportunities for innovative, integrated strategic approaches to address expanded efforts towards global climate change, food security, water governance and global health.

B. USAID/Uganda Program

USAID/Uganda is currently developing a multi-year Country Development Cooperation Strategy (CDCS) that will replace the 2002-2007 Integrated Strategic Plan (ISP). The CDCS will help to ensure USAID programs coordinate with other U.S. Government agencies and donors to support sustainable development of democratic, well governed states. This ETOA will provide analysis to inform the identification of these key, multi-dimensional and cross-cutting complementary development objectives, as well as assist in the prioritization and coordination of USAID/Uganda and other donor resources for greatest development impact and sustainability. Notably, it will highlight opportunities to build linkages between natural resource and environmental conservation and priority development themes identified in the CDCS, the U.S. Mission to Uganda FY2012 Mission Strategic and Resource Plan, and the Government of Uganda 2010-2115 National Development Plan.

Part III - Technical Direction, Management and Communication

The Contractor will report to the USAID/Uganda Economic Growth Office Director or his/her designee. Additionally, the Contractor will be responsible for identifying and obtaining the majority of reference materials needs for this ETOA with minimal interventions on the part of USAID/Uganda.

Technical direction will come from the IRG ENCAP Project Manager, Todd Johnson (tjohnson@irgltd.com; +1 202-289-0100). The consultant will receive administrative and logistical support from IRG's ENCAP Coordinator Luke Kozumbo (lkozumbo@irgltd.com; +1 202-289-0100).

Part IV- Statement of Work

The Contractor shall perform the following assessment activities:

- A) *Pre-travel informational meetings and information gathering.* Prior to traveling to the field, the contractor is expected to:
- 1. Hold meetings with relevant USAID Africa Bureau staff, foremost the Environmental Officer (BEO) and Africa Bureau Environmental Advisor, to ensure full understanding of USAID environmental procedures, the role of the regional bureau in environmental compliance, and purpose of this assignment. This would include policy decisions and approaches that the BEO and Agency Environmental Advisor are taking as per their authority under Reg. 216. Hold additional meetings with Africa Bureau Climate Change Advisor, Office of Food Security, Uganda Desk Officer and members of the Economic Growth, Trade and Agriculture Office Natural Resources Management and Climate Change Teams to discuss both historic and current issues relative to the assessment.*
 - 2. Gather and get acquainted with existing background information on Uganda such as the country's natural resources, geographical, ecological and biological specificities, current status of environment and biodiversity, institutional organization on entity and state level, key stakeholders and donors in environment and biodiversity, legislation related to the environment and biodiversity, and other relevant information required for the assessment.*
 - 3. Meet or speak with key managers and technical staff at the U.S. Department of Interior-- Fish and Wildlife Service and Office of International Activities, USDA Forest Service, U.S. Department of State, World Bank, and U.S.-based NGOs including African Wildlife Foundation, EcoAgriculture Partners, Fauna and Flora International, IUCN, Wildlife Conservation Society, World Resources Institute, World Wildlife Fund, and/ or other organizations involved in biodiversity conservation and environmental management in Uganda, or relevant regional efforts, as identified by the USAID EGAT/NRM and/ or Africa Bureau staff.*
- B) *Field-based data collection and analysis.* Form team to conduct an overview and general analysis of the country's biodiversity and its current status. Upon arrival in Uganda the assessment team will:

1. Meet with USAID/Uganda staff to acquire a solid understanding of Mission program goals and objectives under its proposed updated strategy statement; perspectives of this assignment and specific interests for the team, including advice and protocol on approaching USAID partners and host country organizations with respect to this assignment. The team shall be aware of sensitivities related to an assessment exercise (i.e., the potential for raising expectations, and the need to be clear about the purpose of the assessment) and respect Mission guidance. The team will discuss organizations to be contacted and any planned site visits with the Mission and coordinate as required. USAID/Uganda will facilitate meetings with other USAID Strategic Objective teams and U.S. Department of State offices relevant to the assessment.
 2. Hold meetings with USAID/Uganda identified donor organizations, NGOs, relevant government agencies, and other organizations that are knowledgeable about biodiversity and tropical forestry conservation, environmental management, and/or are implementing related noteworthy projects, and gather information locally. This may include implementing partners supporting activities related to agroforestry, extractive industries management, sustainable eco-tourism, climate change vulnerability, renewable energy, water resources management, conservation agriculture, and environmental/public health.
 3. Conduct no more than four priority site visits, which would supplement understanding of USAID's program, or of environmental management issues that arise in interviews and literature or would confirm information in previous assessments. Two of these visits shall include the Ugandan Albertine Rift and priority areas in the northeast. The remaining field visit sites will be determined by the team during the assessment in consultation with USAID.
- C) *Post field assessment and analysis:* Assess and summarize the needs for natural resource and environmental management, especially biodiversity and tropical forestry conservation, in Uganda based on key threats, and analysis of country, donor and NGO responses to meet these needs. Prepare a report on the status of biodiversity, tropical forestry, and other priority environmental conservation efforts in Uganda, and potential implications for USAID or other donor programming and monitoring which shall define the actions necessary for improved natural resource and environmental management. The report shall include:

Assessment:

1. The current status of biodiversity, tropical forests, and water resources in Uganda based on current and available information.
2. Major ecosystem types, highlighting important, unique aspects of the country's biodiversity, including important endemic species and their habitats.
3. Descriptions of natural areas of critical importance to biodiversity conservation, such as forests and wetlands critical for species reproduction, feeding or migration, if relevant. Particular attention should be given to critical environmental services and non-commercial services they provide (watershed protection, erosion control, soil, fuel wood, water conservation and amenity and recreation).
4. An overview table and maps of the status and management of protected area system in Uganda including: an inventory of all declared and proposed areas (national parks, wildlife reserves and refuges, forest reserves, sanctuaries, hunting preserves and other protected areas). The inventory will identify the institution responsible for the protection and management of each decreed area, its date of establishment, area, and the protection status of each (i.e., staff in place, management plan published, etc.) In addition to this summary of the current protection and management status of each protected area, an overview of the major threats and challenges facing protected

areas in Uganda, and a brief summary of any recognized economic potential of these areas (including productive assets, environmental services, and tourism opportunities) should be provided.

5. An overview table and maps of the status and management of critical biodiversity and forestry areas outside of protected areas in Uganda including: an inventory of all declared and proposed areas (e.g., wetlands/freshwater sources, major catchment areas, agriculture ecosystems, etc.). The inventory will identify the institution responsible for the protection and management of each. In addition to this summary of the current protection and management status of each area, an overview of the major threats and challenges facing these areas in Uganda, and a brief summary of any recognized economic potential of such areas (including productive assets, environmental services, and tourism opportunities) should be provided.
6. Descriptions of plant and animal species that are endangered or threatened with extinction. Endangered species of particular social, economic or environmental importance should be highlighted and described, as should their habitats. Technical information resources such as the IUCN red list and their websites should be referenced for future Mission access as required. This section should not emphasize species counts, but look at the relation of endangered species and important habitat conservation areas and issues, and evaluate the pressure on those areas, including vulnerability to predicted changes in climate, and current efforts to mitigate pressures, including the participation and compliance with CITES and other international efforts.
7. Recent, current, and potential *primary* threats to biodiversity, whether they are ecological (i.e., climate change, fire, pests, etc.), related to human use (i.e., deforestation, resource extraction, agriculture, contamination, infrastructure development, etc.), or institutional (i.e., failed policy, lack of enforcement, transparency, or accountability, and mismanagement, etc.) or transboundary issues, as appropriate. Special attention should be given to resource conflict issues, foremost land tenure. These should emerge from a general assessment of national policies and strategies and their effectiveness, issues related to institutional capacity and accountability, trade, private sector growth, participation in regional and international treaties, and the role of civil society.
8. Conservation efforts, their scope and effectiveness. This section also should include recent, current and planned activities by donor organizations that support natural resource and environmental conservation, identification of multilateral organizations, NGOs, universities, and other local organizations involved in conservation, and a general description of responsible government agencies. A general assessment of the effectiveness of donor coordination efforts, policies, institutions, capacity, and activities to achieve natural resource and environmental conservation should be included. Priority conservation needs that lack capacity (technical and management), good governance, donor or local support should be highlighted.
9. Analysis of the current legislation related to the environment and biodiversity, including Uganda's National Development Plan. This section should include identification of laws related to protection and management of biological resources and endangered species, as well as climate change, renewable energy, and water resource management. It should also point out any differences in laws that require further harmonization. This section should also review international treaties signed and ratified, as well as those that Uganda needs to sign in order to conserve and manage its biological resources more efficiently.
10. An overview of the major biodiversity and tropical forest conservation activities of the commercial private sector to identify ways to better foster private sector alliances. Of interest are the norms and standards followed by those commercial entities most engaged in management and use of Uganda's tropical forests and tracts in or near protected areas.

Consideration of policies promoted by the key relevant governmental ministries should also be included.

11. An analysis of climate change impacts in Uganda, current and near future. This includes impacts on development and conservation measures (agricultural production, disease prevention, etc.), as well as trends, data gaps and opportunities for carbon market financing mechanisms, and for potential linkages with USAID/Uganda programs and donor collaboration to address climate vulnerability.
12. A brief overview and recommendations for global health related environmental issues and linkages, such as population growth, DDT, medical waste, malaria prevention, etc. This includes environmental impacts from increased application of pesticides, biofuel production, biosafety or biotechnology (GMOs), invasive species, and usage of charcoal cookstoves, etc.

Analysis:

1. Evaluation of implementation of 2006 118/119 Biodiversity and Tropical Forestry Assessment, for lessons learned to inform the new 2010 ETOA report.
2. An assessment of how USAID's program and proposed Country Development Cooperation Strategy meets the needs for sound natural resource and environmental (especially biodiversity and tropical forestry) conservation, consistent with Mission program goals and objectives. The assessment shall include recommendations on where U.S. comparative advantages and capabilities are likely to have the greatest impact. These issues and recommendations should be prioritized to identify those requiring the most immediate attention.
3. An assessment of how the Government of Uganda and other donor development plans meet the needs for sound natural resource and environmental (especially biodiversity and tropical forestry) conservation, consistent with their goals and objectives, through development objectives other than environment.
4. A brief section examining opportunities for USAID/Uganda to expand interagency, intergovernmental, and international donor collaboration for increased aid effectiveness, especially in the areas of climate change, water resource management, food security, and health.

If any perceived areas of concern related to USAID's program and its contribution or impact arise during this assessment, the Contractor shall provide views and suggestions directly to the Mission Environmental Officer in a separate briefing.

III - REQUIRED EXPERTISE AND ANTICIPATED LEVEL OF EFFORT

Team members should have a combination of complementary technical skills and knowledge in biodiversity, natural resources management, institutional development, policy, and economics in order to address issues affecting Uganda. At least one team member shall be a host country national, who is knowledgeable about natural resource and environmental management in Uganda. Experience working in Uganda is strongly preferred. The multidisciplinary USAID/Uganda Environmental Threats and Opportunities Assessment Team will be comprised of the following:

- 1) International Senior Natural Resources Team Leader (1 person): Responsible for the assessment and team coordination, and will be answerable to USAID. Required qualifications and experience include post-graduate qualifications in biology, zoology, forestry, natural resources economics or closely related field in natural resources management. Background in tropical natural resources and environmental management, including sustainable agriculture, biodiversity conservation/tropical forestry management, ecosystems management, resource economics and

management, land tenure, and/or climate change. Knowledge of Uganda and/or East Africa and of USAID strategic planning processes related to Environmental Threats and Opportunities Assessment. Knowledge of 22 CFR 216 and of FAA Sections 117, 118, and 119, and related USAID and USG directives. Significant leadership experience and demonstrated expertise in conducting assessments of development programs for impact on environment and tropical ecosystems, and producing reports on such. Expertise in Environmental Impact and Climate Change Vulnerability assessments highly desirable.

- 2) International Senior Natural Resources and Environmental Management Specialists (2-3 persons): Post-graduate qualifications in biology, zoology, forestry, natural resources economics or closely related field in natural resources management. Background in tropical natural resources and environmental management, including sustainable agriculture, ecosystems management, resource economics and management, land tenure, and/or climate change. Knowledge of Uganda and/or East Africa, and of USAID strategic planning processes related to Environmental Threats and Opportunities Assessment. Knowledge of 22 CFR 216 and of FAA Sections 117, 118, and 119, and related USAID and USG directives. Demonstrated expertise in conducting assessments of development programs for impact on environment and tropical ecosystems, and producing reports on such. Expertise in Environmental Impact and Climate Change Vulnerability assessments highly desirable.
- 3) Local Environmental Policy Analyst (1 person): Demonstrated practitioner with experience in implementation of Ugandan environmental law, policy and legal frameworks governing natural resources (especially biodiversity and forest conservation related), environmental management, agriculture and climate change in Uganda, and the analysis of relevant policies. Strong facilitation and networking skills required with a professional network established with Ugandan government agencies, NGOs, international donors and private sector preferred. Proficiency in English also required.
- 4) Local Logistical Assistance (1 person): Experienced coordinator or logistician with demonstrated experience in logistical support, including research, strong multitasking communication (verbal and written—in Microsoft Word), and planning skills. Knowledge of Uganda (esp. Kampala) is required, as is proficiency in English and one local language.

USAID/Uganda anticipates this ETOA will be completed in approximately 5 weeks by a team of at least five full-time members, one of whom is the team leader.

The consultancy will be carried out within the period of December 1, 2010 through February 28, 2010. About 18 days will be in-country, 9 days of preparation and wrap-up, and 4 days travel to/from Uganda. The international consultants will oversee the work of the local-hire consultant. The international consultants will work under the technical direction of the Mission Environmental Officer. The Economic Growth Team Leader, Natural Resources Management Program Specialist, and Environment Officer based at USAID/Uganda will have advisory roles.

IV - SCHEDULE AND LOGISTICS

The 118/119 Environmental Threats and Opportunities Assessment activities will be carried out to inform strategic decisions and priorities for the final USAID/Uganda Country Development Cooperation Strategy currently in draft, and therefore, should be completed in final form no later than the end of February 2011.

Meetings in Washington, DC, will take place between Nov. 29, 2010 and Dec. 17, 2010, with final dates to be determined. The team will coordinate logistical arrangements with the USAID/Uganda Mission Environment Officer. The Mission will assist the team by providing key references and contacts as well

as logistical support where necessary. USAID/Uganda's Program Office will also help facilitate meetings with other Mission SO Team Leaders or their staff to fully brief the team on USAID's program and future vision for their strategy. Field work in Uganda will take place from January 5, 2010 to January 25, 2010. The report is due within 2 weeks after the field work is completed.

ANNEX C – EVALUATION OF IMPLEMENTATION & LESSONS LEARNED FROM 2006 I18/I19

I. PURPOSE OF THE ANNEX

The purpose of this Annex is to provide an evaluation of the implementation of the 2006 assessment to identify lessons learned for the current ETOA.

II. METHODOLOGY

The recommendations of the 2006 Assessment are presented in full. The extent to which each sub-recommendation was implemented is then evaluated, utilizing data obtained by the ETOA team through interviews, reports, and field observations.

III. EVALUATION OF IMPLEMENTATION

Priorities in the Short-Term

- 1) **Maintain the focus on the Albertine Rift** as a biodiversity hot spot with opportunities for increased valuation of protected areas and other natural resources in ways that contribute to poverty reduction and improved welfare for local communities through the application of NWP principles and approaches; NWP fosters the application and integration of approaches along the lines being pursued by PRIME West, with its support for landscape analysis and empowerment of local level decision making, CBNRM and capacity building for the adoption of improved practices, and support for value chains, enterprise development and increased competitiveness.

The 2006 Assessment recommends that USAID/Uganda focus on (1) the Albertine Rift; and (2) improving welfare for local communities. The PRIME/West Project operated “...between the Rwenzori Mountains to the north and the Virunga Volcanic Mountains to the south...” which is an area within the Albertine Rift. STAR maintains the focus on the Albertine Rift. WILD, by contrast, focuses on northern Uganda, outside of the Albertine Rift. According to its field director, its only activity in the Albertine Rift is in MFNP, a study of lions (per. com., 2011). PRIME/W included income generation activities to improve the welfare of local communities; STAR implements income generation/improving welfare of local communities through tourism.

Interestingly, we could find no reference to “NWP principles and approaches” in the documentation of PRIME/West, STAR, and WILD, which we reviewed. NWP appears to have been more of a phrase than a methodology that was useful for the design, implementation, monitoring and evaluation of conservation field activities that are financed by USAID/Uganda.

- 2) ***Reinforce the community conservation components of protected area management programs in frontline communities.*** *UWA and NFA have effectively increased the size of the protected areas network and improved the management of Uganda’s parks, wildlife and forest reserves, but these gains could be undermined through friction and discontent by surrounding local communities unless even more attention is paid to community outreach, environmental education and most significantly to a range of measures to sharply increase the level of economic benefits for local communities generated from conservation and protected areas. Higher levels of revenue sharing, increased range of revenue sharing modalities, more attention to increased employment opportunities and to the expansion of alternative income generating opportunities are needed.*

The Tree Talk activity under WILD responds to the recommendation that USAID/Uganda finance more “...community outreach, environmental education.” Edea Lucy, the District Director for Tree Talk in Gulu, said that Tree Talk has been financed by WILD since 2008 to “sensitize people about the risks of cutting down all the trees and encourage them to leave some trees and plant other trees on their properties.”

PRIME/West responded to the recommendation that USAID/Uganda finance activities that “...sharply raise incomes for local communities...” However, it attempted to achieve this objective mostly through increased and improved production and marketing of coffee, not from “...economic benefits...generated from conservation and protected areas...” However, PRIME/W also supported the creation of a community tourism enterprise at Bwindi, Budongo, and one for the Batwa at Mgahinga. In its last phase, PRIME/W included an environmental education component. PRIME/W “reinforced the community conservation component” by addressing human-wildlife conflict mitigation. The STAR Project has the goal of increasing local income through tourism and sport hunting associated with conservation areas (a sub-recommendation of the above recommendation).

- 3) ***Seek out opportunities to scale up program impacts over large areas, with an impact on a greater number of households.*** *While USAID funded project interventions have been effective in targeted areas and have emphasized community mobilization and participatory processes which take time but enhance the prospects for longer term, sustainable impacts, there is a need to leverage lasting change more rapidly over larger areas and with greater numbers of people if biodiversity and tropical forests are to be conserved in advance of continued land clearing and extension of existing systems of rural production and land use. Larger scale impacts could be achieved through a greater emphasis on systematic training and capacity building with a large number of community based organizations; increased support to civil society organizations with the potential to mobilize public opinion and action over large areas and more attention to leveraging market based incentives, effective transfer of management rights to local communities and improved governance.*

PRIME/W attempted to scale up program impacts through support to civil society; the project facilitated ACODE’s work with local government and civil society (Bulisa District) to develop a natural resource ordinance covering fisheries, forestry, and charcoal production (reported to be one of the better local ordinances). However, in the end, PRIME/W had little success in policy strengthening in the nine areas that were targeted.

- 4) ***Increase support for CBNRM and community forestry interventions.*** *In recent years, UWA, WID and NFA have worked to protect critically important wildlife habitats, wetlands and remaining areas of natural forest, however, there are still significant areas of natural forest, wildlife habitat and wetlands outside of the network of parks and central forest reserves. Unless CBNRM and community forestry interventions are rapidly organized in these remaining unprotected areas, there is a high likelihood they will be converted, cleared or degraded through unsustainable use. There is a rapidly closing window of opportunity to work with communities to establish sustainable land management systems in these areas that could contribute to biodiversity conservation and help to maintain the forest cover, wildlife habitat and wetlands that are important for the sustainable development of Uganda. Programs could be organized to capitalize on urban markets for a range of natural and agricultural products including relatively fast*

growing indigenous species such as Maesopsis eminii, and extension and education efforts could support community based land use planning, sustainable land use and improved NRM practices before these areas are converted and degraded. The district forestry services need to be strengthened if the 'private' forests are to be saved.

PRIME/W facilitated the signing of ten Collaborative Forest Management agreements; supported collaborative management of wetlands; six CBNRM-wetlands enterprises were supported; and worked with fishing villages at QEPA on conservation of the fishery.

- 5) *Develop a sustainable financing strategy and conservation finance program to ensure that UWA, NFA, NEMA, ITFC and local conservation programs will have the resources to continue; consider options to support payment for environmental services, carbon trading, increased allocations of revenues to local communities, and for fiscal policy reform in support of conservation and environmental management objectives (tax breaks for adoption of sustainable use and improved NRM practices; conservation easements; etc.)*

There is no evidence that PRIME/W, STAR, or WILD created or are creating sustainable financing strategies and conservation finance programs.

- 6) ***Strengthen coordination and knowledge management among environmental management agencies (UWA, NFA, NEMA, Fisheries) at both the national and district / local levels; also, enhance collaboration and information sharing among SO7 projects and Uganda partner institutions through periodic retreats and team building sessions. Consider options to increase support for knowledge management, research networking and collaboration with university and training institutes; facilitate information sharing through support for collaboration on bi-annual SOE reports prepared by NEMA.***

Coordination among environmental management agencies and knowledge management was not included in PRIME/W's design or in the designs of WILD and STAR.

- 7) ***Support widespread distribution of the 118/119 Assessment among all Mission SO teams, and promote discussion of the report findings and recommendations, particularly with SO7 and SO11 projects and partners.***

Recommended Medium and Longer Term Interventions

- 8) ***Reinforce efforts aimed at donor coordination, especially with respect to periodic information sharing, evaluation and review of what's working, and reassessment of strategic priorities.***

Various interviews the ETOA team held indicated that USAID/Uganda has not been active in donor coordination.

- 9) ***Continue mission wide environmental training and extend to all SO implementing agencies and partners and work with local partners to support awareness creation, advocacy capacity and applied research on environmental and related sustainable development issues.***

The mission has promoted and supported environmental training for all SO IPs.

- 10) ***Maintain support for strengthening of environmental management institutions, with particular attention to the sustainability of programs and interventions coordinated and supported by NEMA, UWA, NFA and the Wetlands Division.***

PRIME/W, WILD, and STAR were not designed to strengthen sustainability of GOU E/NR agencies. They mainly worked through the private sector.

- 11) ***Increase efforts to support land use planning, control soil erosion, ill-considered land use conversion and encourage optimal utilization of land resources through revisions to the Land Act and land use policy reforms.***

There is no evidence that this recommendation was implemented.

- 12) **Support biodiversity inventories and long term monitoring** along with regular environmental and sustainable development reports in collaboration with Makerere University, NEMA and other institutions.

PRIME/W supported the development of a GIS as part of their landscape approach. The GIS was developed in collaboration with local experts; and support activities helped build local capacity for biodiversity conservation in southwest Uganda: (1) participatory community mapping introduced the CBNRM concept to two pilot villages, through which one community identified land resources for sale back to the government in an effort to extend the functionality of a wildlife corridor; (2) a multiple criteria analysis for fisheries provided an “optimized” map to extension officials for planning and monitoring purposes, and provided training to local experts in this methodology; and (3) capacity building workshops in GIS for natural resources management for environmental officers and planners in six districts. Two of these, Kasese and Bushenyi thereafter adopted the use of GIS in their planning processes, including investments in hard and software.

WILD has signed a Memorandum of Understanding with the University of Gulu under which it operates from the university campus and has provided training in GIS to the computer department of the university (Andogab, G.; Tabo, G., per. com. 2011).

IV. LESSONS LEARNED

- 1) **Focused:** Most of the recommendations in the 2006 report are general, so they did not serve to identify the specific conservation problems that USAID/Uganda could have assisted Uganda to manage or resolve during the period of the strategy 2006 to 2010. Such generalities also make it difficult to monitor the implementation of the recommendations.
- 2) **Equivalent:** Some of the recommendations in the 2006 Report are complex, such as numbers 1 and 2, with a number of sub-recommendations. Others are much simpler, such as numbers 7 and 8 through 12. Recommendations are more convincing if they are equivalent in their level of complexity, since they do not leave the reader left wondering the reason for the differences in the level of complexity.
- 3) **Coordinated and Integrated:** Recommendations should be proposed as part of the CDCS and the DOs and IRs that are expected to implement the recommendations. Recommendations should be directly linked to Actions Needed/Extent to Which USAID Meets the Needs Identified.

ANNEX D – BIOGRAPHICAL SKETCHES

International Senior Natural Resources Team Leader: Karen Menczer was a Natural Resources Advisor and Assistant Bureau Environmental Advisor in USAID/Latin America and Caribbean Bureau from 1991-1997. From 1997-2002 she lived in Uganda, and worked first as a Natural Resources Advisor at USAID/Uganda, and then as an independent consultant. Subsequently, she lived and worked as an independent natural resources consultant in Jamaica, Botswana, and Ghana. She was involved in USAID/Uganda APE and COBS implementation as part of USAID and then as a consultant. She mainly works on USAID Regulation 216, ETOAs, and USAID project design, implementation, monitoring, and project evaluation.

International Senior Natural Resources Specialist: Bruce S. Kernan has an undergraduate degree in geology and anthropology from Hamilton College and master's degrees in forestry and natural resources from Yale and Cornell Universities. Since 1982, he has worked for USAID as a foreign service officer, as the Regional Environmental Advisor for South America, and as an independent consultant. He lives in Quito, Ecuador.

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ANNEX F – ADDITIONAL CLIMATE CHANGE ANALYSIS FOR THE CDCS

During preparation of the ETOA, USAID/Uganda was requested to respond to a request from USAID/Washington for additional climate change information as follows:

- How have recent programs and sectors been affected by climate events? How might such changes affect mission’s key DOs?
- Where are there opportunities for adaptation to climate impacts by building resilience to these physical changes into mission/country planning?
- How emissions-intensive are current activities? How emissions-intensive are current Uganda economic development priorities? Can GHG emissions be reduced?

The ETOA’s Climate Change Specialist provided the following information in response to this request.

How have recent programs and sectors been affected by climate events? How might such changes affect mission’s key DOs?

Although there are no substantial empirical data to determine the current actual impact of climate change and predicted impacts over the next decade across major sectors of the economy, there is a general agreement that major sectors and programs have been affected by the recent occurrences of extreme weather events in Uganda and this will continue to hinder national and donor plans for economic development unless urgent efforts are directed towards adaptation mechanisms. For example, areas suitable for coffee production are predicted to reduce by more than 70% in the event of a 2°C temperature increase; this will potentially wipe out US\$265.8 million – up to 40% of export revenue (Hepworth and Goulden, 2008). Also, the declining water levels in Lake Victoria have affected power generation capacity of the dam and, as a consequence, it is operating at half its planned capacity (Saundry, 2009). The result of this has been frequent load-shedding which has affected urbanization, industrial production, industrialization, and, as a consequence, led to unemployment as workers are laid off hence threatening their livelihoods – in certain cases, this could even force people to encroach into protected areas as they search for alternative livelihood options. Also, this has reduced export earnings from industrial products and increased domestic reliance on wood fuel to meet household energy needs to cope with the unreliable power supply. However, the lack of concrete data makes it difficult to determine what the impacts of the load-shedding have had on increasing demand for wood fuel, lay-off of industrial employees, and performance of industries and export earnings.

Warming has led to the extension of malaria into previously cooler regions like Kabale, while flooding has increased prevalence of water-borne diseases – cholera and typhoid, affected crop yields, and in some cases has cut off communities and destroyed infrastructure, hence delaying emergency response efforts, making students unable reach schools, health clinics unreachable and causing crops to spoil while awaiting transport to markets. *El nino* floods in 1997/1998 are estimated to have led to road and

infrastructural damage worth \$400 million, displacement of 150,000 people, death of about 100,000, disruptions in transport systems leading to 60% decline in coffee exports between October and November, and destruction of about 300 hectares of wheat plantations (ACCRA, 2010).

In Karamoja, a prolonged dry spell has increased dust storms, respiratory diseases, and eye infections. This is not to suggest that the reported cases of respiratory diseases and eye infections are entirely a result of climate change; other factors like personal hygiene and the inadequacy of health units are equally valid reasons to be considered.

Drought in Karamoja has also reduced grazing areas and increased water scarcity for livestock and domestic use. This has affected the livelihoods of pastoralists and subsequently led to conflicts over grazing land both within the region and the neighboring communities as pastoralists venture in search of pasture. The resulting conflicts are a hindrance to the peace and stability of the region; thereby, more efforts and resources will be allocated for peace building instead of enhancing livelihoods and economic development of not just Karamoja but also surrounding communities like Acholi, Lango, and Teso areas.

The impacts of climate change on livelihoods has been exacerbated by the population explosion and these have heightened food insecurity, malnutrition, deforestation, and encroachment into protected areas, ultimately intensifying loss of biodiversity and further climate change. Annual population increase is estimated at 3.2%; this puts substantial pressure on available natural resources – water, land, forests, and wildlife among others. Population pressure on land will result in a shift away from traditional farming systems – like terracing in southwest Uganda and shifting cultivation in northern Uganda – that were responsible for maintaining soil quality and ecological balance. Significantly, this will intensify land degradation and soil quality decline. It is a truism that communities will be driven to encroach into protected areas like parks, wetlands, and forests to sustain their livelihoods: however, it is difficult to ascertain the magnitude of predicted encroachment.

Additionally, the escalated occurrence of these extreme weather events are a hindrance to agricultural production: crop pests and diseases will increase; maize production in northern Uganda will be strongly affected, especially noting that maize is not drought tolerant; and coffee production will be severely hit if the current 0.3°C temperature rise per decade are not checked. Actions needed to address these potential impacts and enhance adaptive capacity of poor farmers include encouraging conservation agriculture activities, crop modification (with particular emphasis on drought and flood tolerant varieties and pest and disease tolerant varieties) encouraging cultivation of multi-purpose crops, and encouraging agro-forestry practices. However, any intended crop modification activities should take into account the current constraints on food bio-safety laws, which do not encourage genetic modification. Also, improved cook stoves and voluntary tree planting for carbon credits are strategies to improve energy use efficiency, reduce excessive wood fuel usage (and deforestation), generate income, and entice communities to invest in tree planting.

Where are the opportunities for adaptation to climate impacts by building resilience to these physical changes into mission/country planning?

Noting that agriculture employs more than 80% of the population yet its current contribution to GDP is not substantial, the low volume of current agricultural exports are linked to two main factors: production losses due to climate change and poor post-harvest handling, hence sub-standard quality. This has reduced the demand for Uganda's agricultural products at regional and international markets. Climate change adaptation strategies such as conservation agriculture, plant breeding, and appropriate technology present an opportunity to enhance agricultural performance, reduce food insecurity, generate income, and improve community resilience to climate-related events. Sustainable agriculture will also curb land degradation, enhance soil quality and improve crop diversity through the development of improved crop varieties to suit specific soil types, regions or weather conditions.

Predicted impacts of climate change on the livelihoods, peace and stability of Karamoja (the CDCS's SpO) and the neighboring region can be mitigated by investing in water harvesting and utilization systems. Current excursions of pastoralists into neighboring areas have been linked to search for water, food, and grazing land; climate change interventions should target water harvesting and efficient utilization at a household or community level. Water utilization techniques like drip irrigation and polytunnels are viable, sustainable, and crucial for improving crop production in drought-prone areas, increasing grazing areas, and strengthening sources of livelihood. Ultimately, this will reduce conflicts from pastoralist's excursions and competition for grazing land.

Most individuals interviewed linked agricultural losses to mainly poor post-harvest management and also cited that there is insufficient linkage between areas of surplus production to those of food scarcity; hence, reported cases of food insecurity while other areas have plenty. To curb this, the World Food Programme (WFP) vulnerability analysis and mapping Programme Assistant asserted that market information should be provided to farmers, and good road networks should be constructed to facilitate transportation from areas of surplus to areas of scarcity. This will motivate farmers to increase their production and farm income and reduce food insecurity. To increase production, activities to enhance land productivity should be encouraged, inputs distributed to resource-poor farmers, and improved agricultural techniques should be disseminated to farmers. Furthermore, construction of modern storage facilities, building capacity of farmers to enhance their post-harvest skills and linking farmers to available markets (through infrastructural development and disseminating market information) will be necessary to improve livelihood sustainability, natural resource management, and resilience of communities to impacts of climate change. These are strategies that will be integrated into FTF as part of climate change adaptation, and also as part of strengthening value chains.

Investing in carbon market financing schemes will reduce GHG emissions, generate income for resource poor farmers, and enhance environmental sustainability. Viable opportunities for carbon market financing schemes that make a difference at the micro-level (household) are more appropriate for sustainable long-term climate change adaptation because resource poor households bear the brunt of climate change due to their lack of alternatives and dependencies on the environment for livelihoods. Schemes such as improved cook stoves, domestic bio-gas, briquettes and charcoal from sawmill residues may be able to be woven into the Feed the Future interventions. While at institutional and national level, *Programmes of Activities* such as afforestation/reforestation, wastewater treatment, energy efficiency and fuel switch, and renewable energy can be vigorously and collaboratively supported as a separate intervention – if USAID is unable to support such interventions, the agency should coordinate with donors and advocate for this type of support .

How emissions-intensive are current activities? How emissions-intensive are current Uganda economic development priorities? Can greenhouse gas (GHG) emissions be reduced?

The last greenhouse gas inventory according to sectors in Uganda was conducted in 1995, and since then the population has risen tremendously (by more than 11.5 million), construction and industries have grown, burning of fossil fuel and deforestation has intensified (a decline in forest cover from 20% to 15% of the total land cover between 1990 and 2010 has been reported by FAO), and the agricultural sector has expanded. These trends suggest that emissions have also increased; however, current statistics are not available to determine how emissions-intensive current activities and development priorities are compared to the past.

Four of the eight priority sectors highlighted by the 2010/11- 2014/2015 National Development Plan to achieve economic development are likely to significantly increase GHG emissions if unchecked and inevitably worsen impacts of global warming and climate change. These sectors are: agriculture, mining,

oil and gas and manufacturing, produce substantial volumes of green house gases – methane and carbon dioxide.

GHG emissions can be reduced by investing in renewable energy sources like solar and hydro electric power; however, this requires substantial investment. Other cheaper alternative sources that could be tapped at household and institution level are biomass and use of biofuels. All these are viable sources of energy because the requirements and resources are available. Investing in renewable energy would contribute greatly to reducing deforestation for fuel – firewood and charcoal – and enhance environmental sustainability. Currently, 91% of Ugandans rely on forests to meet their domestic energy needs (Saundry, 2009). To meet these needs, suitable land would have to be targeted for planting trees to avoid further encroachment on natural forested areas. Trees are also crucial for enhancing land stabilization, wind breaking, climate regulation, and soil quality.

National efforts to reduce GHG emissions

The government of Uganda is implementing the first of five three year programme – ending June 2011 – on “*Promoting Renewable Energy and Energy Efficiency Programme (PREEP)*” with support from KfW and GTZ. It focuses on increasing efficient energy use and enhancing the supply of energy from renewable sources. At this point, the effectiveness of this programme is still unknown (MEMD website).

What are the opportunities for carbon market financing mechanisms, linkages with USAID/Uganda programs, and donor collaboration to address climate vulnerability?

The Advocacy Officer of CAN-U strongly agreed with the enormous potential for carbon market financing in Uganda but also added that for it to achieve the desired goals, returns from carbon sales should be worth the investment by smallholder farmers whose priority is to meet household food needs. The Chairman of Uganda Carbon Bureau noted that there is need for investment (by the government and donors) in carbon market financing mechanisms as a viable and long-term strategy of reducing GHG emissions and ultimately mitigating against the impacts of climate change. It is important to note that presently the carbon market is not regulated, with buyers determining the prices, and this can be a demotivating factor for small holder farmers. Also, at the moment, the government cannot regulate the carbon market because it has no funds for carbon financing.

The Uganda Carbon Bureau is the leading carbon agency in East Africa. It works in close collaboration with major donors and natural resource stakeholders, merging a multi-faceted approach with a multi-country strategy. Presently, it implements seven carbon projects: REDD – Abalinda Ebihingwa, Forestry, Kampala Waste Water Treatment Plant, Programme of Activities (PoA), Waste Water, Charcoal from Sawmill Residues and Agro-power Cogeneration. The PoA is funded by multiple donors: DFID, GTZ, CARE, NCF, KfW, DANIDA, the Belgian government, and UNEP. Its current focus is on improved cook stoves, renewable energy, afforestation/reforestation, domestic bio-gas/briquettes, energy efficiency/fuel switch, waste water, charcoal from sawmill residues, and agro-power cogeneration. It therefore presents a viable opportunity to combat climate change by reducing GHG emissions at domestic and institutional level, improving energy use efficiency, reducing water treatment expenditures, and enhancing environmental sustainability.

Carbon Neutral Scheme is another alternative market and incentive for voluntary carbon sellers (smallholder farmers). In this case, agencies commit to compensating farmers for offsetting their carbon footprints. The Uganda Carbon Bureau and Carbon Neutral Service currently have the Danish Embassy, safari operators, green enterprises, IMF, the Irish Embassy, USAID, and aviation as its clients.

Table F-1 Programs that have positively contributed to community adaptive capacity to climate change

| Name of intervention | Organization carrying out intervention | Aim and brief description of intervention |
|---|---|---|
| Rwenzori Livelihoods Improvement for Disaster Vulnerable Communities Program 2006 – 2009 Implemented in Bundibugyo and Kasese districts | Oxfam GB Uganda in partnership with NORRACOL, AMA and Uganda Red Cross, FURA and CARITAS | The goal of the program is to ensure that poor women and men in the disaster-prone Rwenzori region are empowered to achieve sustainable livelihoods, influence those with power over them and ultimately improve their standard of living. This will be achieved through enhanced disaster preparedness and management; improved market access; improved sanitation; and addressing gender inequalities. |
| Reducing vulnerability of pastoral communities through policy and practice change in the Horn and East Africa A 15 year program that started in 2006 | Oxfam GB Uganda Implemented in Kotido and Kaabong | Pastoral women and men in the region leading a secure and sustainable life integrated into and able to influence political, social and economic systems at national regional and global levels The program has the following thematic areas: policy and practice change in support of pastoral livelihoods with focus on cross-border dimensions; learning lessons for best practices and policy change; enhanced capacity of country programme staff and partners in DRR, CCA livelihood programming, analytical skills and cross-border issues |
| Regional Drought Decision (RDD) for the Horn of Africa countries Djibouti, Eritrea, Uganda, Somalia, Ethiopia and Kenya | ECHO RDD partners in Uganda; FAO, DCA consortium (C&D, KADP, ACTED) OXFAM GB, GoU and VSF-B | To save lives, alleviate human suffering and pave the way for longer-term development actions by reducing vulnerability and strengthening capacity to respond to recurrent droughts in the affected areas. Areas of intervention include: water and pasture; animal health and livelihood; human health and nutrition; mainstreaming community-based drought preparedness activities; and coordination and technical supervision. |
| Drought Early Warning Systems Programmes Amuru, Gulu, Apac. Oyam Lira Dokolo; Moroto, Kotido, Nakapiripirit, Abim | ACTED funded by ECHO RDD and RDDII, Dan Church Aid, Cooperation and Development, and KADP | ACTED mission statement for 2010 is “to strengthen and diversify livelihood by building local economies, supporting disaster preparedness and fostering good governance through a community driven approach” |
| Scaling-Up Savings to Augment Income Nationality (SUSTAIN) Phase II 2008-2010 | Care International in Uganda funded by DFID | Provides access to financial services to the poor/marginalized households in Northern Uganda on a sustainable basis by 2010. Implemented in Teso, Lango, Acholi, Karamoja and West Nile |
| National Agricultural Advisory Services (NAADS) | Government of Uganda | NAADS mission “to increase farmers access to information, knowledge and technology for profitable agricultural production.” The programme is designed to become decentralized, farmer owned and demand-driven with a private sector development objective implemented countrywide |
| Northern Uganda Social Action Fund (NUSAF) | Funded by World Bank | Aimed at reducing poverty and promoting sustainable development and creating conditions for increased investment in agriculture and rural development among communities in Northern Uganda affected by 20 year insurgency. |
| Peace Recovery and Development Plan (PRDP) for Northern Uganda 2007-2010 | Government of Uganda | The goal is to consolidate peace and security and lay foundations for recovery and development. It has four strategic objectives: - consolidation of state authority - rebuilding and empowering communities - revitalization of the economy - peace building and reconciliation |
| Livelihoods and Enterprising for Agricultural Development (LEAD) 2008-2013 | USAID programme implemented 60% in Northern Uganda and 40% rest of the country | Provide support to selected farmers that grow food and cash crops through value chain approach to agricultural development. It has three components: 1) improved productivity, 2) increased trade, and 3) enhanced competitiveness |

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| Famine Early Warning System Network | FEWSNET-USAID under the Ministry of Water and Environment | FEWSNET uses food security information-based approach to preparedness and planning in sub-saharan Africa, and aims to empower Africans to find solutions to food insecurity problems |
| Adaptation of African Agriculture to Climate Change (research programme) 2008-2010 | GTZ in partnership with National Agricultural Research Organization (NARO) and International Potato Centre (CIP), International Food Policy Research Institute | Enhancing the capacity of most vulnerable poor to adapt to climate change. The research is designed as an interdisciplinary and multi institutional programme working with national and international research institutions and universities on matters of cropping systems, climatology, plant breeding, grazing management and agro-forestry, water management and policy research |
| Rain Water Harvesting and Ground Water Recharge 2009-2011 | Water Governance Institute. Partners; Uganda Rainwater Association (URWA) NARO – Bulindi station | Rainwater harvesting techniques adopted among communities in arid, semi-arid and wet areas of Uganda. The project is designed to provide training to farming communities on rainwater harvesting technologies, catchments management approaches and providing minimal support to a community cost-sharing scheme to establish water harvesting infrastructure |

Source: ACCRA, 2010 pages 37 – 41

Note: these projects were perceived to have enhanced community adaptation to climate change, however an evaluation of their impacts was not available during consultations for this study.

POTENTIAL THREAT TO LIVELIHOODS AND ECOSYSTEMS

As part of the ETOA investigations, the following information was gathered on potential impacts of climate change on livelihoods and biodiversity in Uganda. The information presented below should be reviewed prior to designing USAID programs, and incorporated into designs, as appropriate.

AGRICULTURAL PRODUCTION

With more than 80% of the population dependent on rain-fed agriculture for their livelihoods, any variations in rainfall patterns will substantially impact on crop production, with subsequent effects on food security and economic development. It is a truism that agriculture is the most sensitive sector to any seasonal variations in weather conditions and climate. Crop yields are dependant on the land's productive capacity and stable and reliable rainfall regimes and, therefore, any alterations to this can result in devastating crop yields while unusual temperature variation can lead to complete crop failure. A briefing paper by the Environment and Natural Resources Department stated the size of severely degraded and very severely degraded land in Uganda as being 36% and 10% respectively, while another study revealed that Uganda loses 11% of its Gross National Income annually as a result of soil erosion (Yaron and Moyini, 2003). This degradation has been attributed to impacts of climate change, forest clearing and increased use of marginal land (ENR-Sub sector review, 2010).

If, as predicted by Hepworth and Goulden (2008), temperatures rise by up to 1.5°C over the next 10-20 years, evaporation and evapotranspiration will intensify, thus, leading to an increase in heat stress on soil and crops, decreasing annual precipitation and resulting in shortage of water for domestic and agricultural use. An increase in humidity and temperature will also increase the prevalence of vector-borne and water-borne diseases like malaria, typhoid, and cholera. Devastating wilt diseases have already been identified attacking coffee plants, malaria has become prevalent in Kabale District, and a 135% increase in malaria cases has been reported in Mbarara District. These were events hitherto unheard of before this last decade, and they have been attributed to climate change. Additionally, coffee production in the mountain ecosystems has already been observed to be harshly affected by climatic changes and this is set to continue if predictions prove to be accurate. The Mission's Development Objective 1 – FTF identifies coffee as one of their three target value chains. FTF interventions in the coffee value chain will have to take into account the potential effects of climate change; the FTF strategy acknowledges this and includes cross-cutting activities in adaptation to climate change. A report by Oxfam, *Turning up the Heat:*

Climate Change and Poverty in Uganda” reported production losses of up to 40% for some small cooperatives (Oxfam, 2008). This is highly important for the Government to consider in terms of possible measures to take, as the economy is very much bound up with coffee production – it is the main export of the country and contributes significantly to the Gross Domestic Product.

FOREST ECOSYSTEMS

Climate change poses a significant threat to environmental sustainability as communities living on the periphery of forests search for supplementary livelihood streams to bolster what they produce from their own small parcels of land (due to traditions of inheritance and population increase, individual farms have become smaller and smaller). Already, there are noted encroachments into forest ecosystems to sustain livelihoods, influenced by the high demand for wood products: fuel wood, charcoal, timber, and construction poles. Deforestation heightens insolation, dessication, soil quality decline, and land degradation. It has been estimated that 92,000 hectares of forests are currently being lost annually (ENR – Sub Sector Review). Climate change will increase the prevalence of forest pests and diseases and subsequently intensify forest dieback and loss of forest biodiversity, inevitably hindering forest ecosystem conservation efforts. Because of forest degradation, the climate regulatory function of forests will be reduced in the long run, thus, exacerbating impacts of climate change.

DRYLAND ECOSYSTEMS

Prolonged dry spells will threaten livestock production as viable grazing areas decrease, water scarcity increases, and herders struggle to maintain their herds. These factors can lead to heavy competition for grazing land. One of the communities that are likely to be affected is the Karamajong agro-pastoralists, concentrated mainly in the northeast of Uganda; they are known for hostile relations with other neighboring communities and the likelihood of conflicts over grazing zones will rise, threatening the peace and stability of the region. This could affect US USAID’s Special Objective One, and climate change should be taken into account when designing interventions.

RIVER BASINS

In the Acholi, Lango, and Teso regions, there are two possible scenarios: increased flood risk *or* increased water insecurity due to decreasing water volumes of the surrounding river systems.

In the first scenario, flooding would lead to a decline in soil quality due to increased erosion and sedimentation and a reduction in productivity of the land and its economic value for crop production; this would then expose the community to further livelihood vulnerability hence jeopardizing FtF interventions in the region. For instance, maize failures would reduce household farm incomes and, therefore, reduce the capacity of households to cope with subsequent stresses – leading to increased poverty and food insecurity. Additionally, flooding would increase infrastructural destruction, displacement and, to a considerable extent, migration to urban centers.

In the second scenario, decreasing water resources (volumes of rivers and lakes) would affect the hydrological cycle, reduce water for hydro-electric power generation, and heavily affect urbanization and industrialization. This would result in secondary impacts of job loss, power instability, and also would affect agricultural production and household use of the rivers and lakes. Various reports have linked the recent fluctuations of the volumes of Lake Victoria and River Nile to climate change; however, there is no empirical evidence to prove this. The decline in the water level since late 2005 has been affecting the power generation capacity of the Owen Falls Dam, resulting in increased load shedding, affected industrial operations and ultimately impacting national development plans for rural electrification and industrialisation. The current electricity generation capacity of the dam, estimated at between 135-140MW, is only half the planned production (Saundry, 2009).

MOUNTAIN ECOSYSTEMS

A report by Oxfam (2008) identified southwest Uganda as the fastest warming region in the country (0.3°C per decade). Such a temperature rise increases the likelihood of pest and disease outbreaks and affects coffee production and eventually threatens the livelihoods of the communities living there. Additionally, the hilly terrain of this zone means that more occurrences of extreme weather events lead to increased risk of landslides and mudslides. Landslides, in part attributed to climate change, have already occurred in the Mt. Elgon area. Besides threatening lives and livelihoods, landslides decrease the area of land available for cultivation and other uses, and this could potentially result in encroachment into protected areas and demand for de-gazettement.

WILDLIFE AND UGANDA'S PROTECTED AREAS

Extreme weather events like floods, warming, and storms affect the habitats in which animals live and one potential adaptation mechanism is migration. In Uganda, where migration corridors are limited and protection within these corridors is weak, migration is expected to result in more human-wildlife conflicts, increased killing of wildlife that comes into contact with humans, and lower population numbers. Corridors may not provide the diversity of habitats needed for healthy populations of wildlife – they are meant to secure links among critical habitats only. Yet wildlife species may be forced into these small corridors. This could impact the wildlife tourism industry, one of the top contributors to Uganda's GDP. Currently, there is no empirical evidence indicating forced migration of animals due to climate change.

In conclusion, the effects and impacts of climate change will not just be felt by the poorest 31% of the population who live below the poverty line; the welfare of the wider populace and ultimately the economy of Uganda will endure the costs, biodiversity will be lost, sustainability of natural resources will be threatened, and efforts aimed at achieving Millennium Development Goals One – ending poverty and hunger – and Seven – ensuring environmental sustainability – will be curtailed. An annual economic loss in excess of 120 billion Uganda shillings resulting from destruction of more than 800,000 hectares of crops has been linked to climate change; it has been stated that more than 70% of disasters in Uganda are climate change related (ACCRA, 2010). An estimated 4.11 million people have been affected by these climate change related disasters since 1979: 3.2 million from severe droughts; 0.9 million from floods; and 0.1 million by water borne diseases and malaria epidemics (*op. cit.*).

Identified gaps

While increasing evidence of climate change-related impacts observed by the rural poor throughout the country continues to grow, very little has been done by the Government to support vulnerable households facing the brunt of these impacts. In comparison, the international community and NGOs have undertaken numerous initiatives and documented and piloted climate change adaptation measures based on disaster risk reduction and rural development approaches throughout the country (see Table F-1, this annex).

The Government has not planned and implemented adaptation mechanisms; progress by the government has been slow mainly due to lack of a systematic institutionalized national level planning, as well as financial restrictions. For example, the National Adaptation Plan of Action (NAPA) was developed in 2007, but to date, a national implementation unit has yet to be established. NAPA listed nine priority projects for climate change adaptation but broad implementation have not taken off. These projects are:

- Community tree growing to increase tree cover in vulnerable and resource constrained communities

- Land degradation management to curb land degradation in climate change vulnerable and resource poor communities
- Strengthening meteorological services to enhance data collation and strengthen technical capacity
- Community water and sanitation to increase access to safe water supply
- Water for production to improve utilization of water resources
- Drought adaptation to enhance adaptive capacity of vulnerable communities
- Vector, pests, and disease control to understand the linkages of these outbreaks to climate change and to facilitate cost-effective management
- Indigenous knowledge and natural resource management to enhance sustainable use and management of natural resources
- Climate change and development and development planning to integrate climate change issues into national development plans and implementation at all levels.

Contrary to claims of the CCU that tree planting (managed by NFA) is already ongoing, ACCRA consultations suggested that this activity by NFA may not necessarily be linked to NAPA initiatives and objectives (ACCRA, 2010).

Although Uganda signed the UNFCCC agreement in 1992, ratifying it in 1993, a national climate change unit was only established in 2001 – with significant influence of the Danish government. There is also a dearth of research and empirical data on household adaptive capacity, findings from which are pertinent for analysis and for feeding into national level planning and policy formulation for viable adaptation and mitigation approaches.

The environmental sector currently receives limited financial support – just 1% (71.9 billion shillings) of the national budget for the 2009/2010 financial year was allocated to the sector, of which 83% was donor funded – as compared to other sectors like agriculture (ENR- Sub Sector Review, 2010).

Both the CAN-U Advocacy Officer and CCU Coordinator pointed out that there is inadequate correlation of scientific evidence related to climate change and practical prevailing conditions – climate change findings are not adequately linked to other sectors and few sectors use scientific evidence generated when designing activities for different sectors. There is also inadequate dissemination of available scientific findings to resource constrained farmers. Capacity building efforts should focus on periodic collation and dissemination – through farmer groups, media outlets and leaflets – of prevalent and anticipated weather conditions. It should also incorporate generation of locally held knowledge of climate change perceptions, current coping and adaptation mechanisms, and potential future adaptation strategies.

Despite the general acceptance that climate has indeed changed in Uganda, there is insufficient scientific justification of its impacts, trends, and predictions and this directly affects the design and implementation of sustainable adaptation and mitigation mechanisms. As a result, most current programs and activities are livelihood coping strategies repackaged to mean community level adaptive mechanisms, e.g., the shift from cultivation to charcoal production. Also, most current climate change-related studies in Uganda look at socio-economic, political, and biodiversity themes and not the equally important scientific projections like climate modelling. This gap could be addressed by strengthening meteorological data collation and dissemination, undertaking collaborative researches with institutions – this will enhance technical capacity of the institutions and researchers and improve awareness of climate change.

ANNEX G. SURVEY DATA OF WILDLIFE POPULATIONS IN PROTECTED AREAS

Table G-1. Population estimates of QEPA since 1988

| Species | 1988/89 ^A | 1992 ^B | 1995 ^C | 1999 ^D | 2000 ^E | 2002 ^F | 2004 ^G | 2006 ^H | % Augmentation since 2004 |
|------------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------------|
| Buffalo | 5,000 | | 17,000 | 7,000 | 10,000 | 6,807 | 6,777 | 14,858 | 119.2% |
| Elephant | 400 | 500 | 1,100 | 1,300 | 1,100 | 998 | 2,497 | 2,959 | 18.5% |
| Hippo | 2,200 | | 2,800 | 2,900 | 3,400 | | 2,632 | 5,024 | 90.9% |
| Topi | 400 | | 500 | 325 | 94 | 157 | 440 | 1,521 | 245.7% |
| Uganda kob | 18,000 | | 31,000 | 21,000 | 32,000 | | 17,440 | 20,971 | 20.2% |
| Warthog | 1,600 | | 1,200 | 1,900 | 2,400 | | 1,880 | 1,388 | -26.2% |
| Waterbuck | 1,500 | | 1,800 | 2,200 | 4,500 | | 3,382 | 3,548 | 4.9% |

AOlivier et al (1989); BOlivier (1992); CLamprey and Michelmore (1996); DLamprey (1999); ELamprey (2000); FRwetsiba et al (2002); GRwetsiba et al (2004); HWanyama (2006)

Table G-2. Population estimates of MFCA since 1973

| | pre-1973 ^a | 1980 ^b | 1991 ^c | April 1995 ^d | Dec. 1995 ^e | June 1999 ^f | May 2002 ^g | Jul-05 | Mar-10 |
|------------|-----------------------|-------------------|-------------------|-------------------------|------------------------|------------------------|-----------------------|---------------|---------------|
| Buffalo | <i>30,000</i> | <i>15,250</i> | 1,610 | <i>1,087</i> | <i>2,477</i> | <i>3,889</i> | 8,200 | <i>11,004</i> | 9,192 |
| Giraffe | <i>150-200</i> | - | 78 | <i>100</i> | <i>153</i> | <i>347</i> | 229 | <i>245</i> | 904 |
| Hippo | <i>12,000</i> | <i>7,565</i> | - | <i>1,498</i> | <i>1,238</i> | <i>1,792</i> | - | <i>2,104</i> | 955 |
| Uganda Kob | <i>10,000</i> | <i>30,700</i> | - | <i>6,355</i> | <i>4,373</i> | <i>7,458</i> | - | <i>9,315</i> | 36,640 |
| Elephant | <i>12,000</i> | <i>1,420</i> | 308 | <i>201</i> | <i>336</i> | <i>778</i> | 692 | <i>516</i> | 904 |
| Waterbuck | - | <i>5,500</i> | - | <i>539</i> | <i>566</i> | <i>792</i> | - | <i>1,441</i> | 6,430 |
| Warthog | - | - | - | <i>411</i> | <i>856</i> | <i>1,639</i> | - | <i>2,298</i> | 1,962 |
| Hartebeest | - | <i>14,000</i> | - | <i>3,068</i> | <i>2,431</i> | <i>2,903</i> | - | <i>4,101</i> | 3,589 |

Numbers in italics are from sample counts with standard errors omitted for clarity. Numbers in normal script are from aerial total counts. Sources: ^aUNP (1971), Laws *et al* (1976); ^bMalpas (1978), Douglas-Hamilton *et al* (1980); ^cOlivier (1991); ^dSommerlatte & Williamson (1995); ^eLamprey and Michelmore (1996); ^fLamprey (2000); ^gRwetsiba *et al* (2002).

Table G-3. Animal population trends in KVCA

| Species | 1967-72 | 1981-82 | 1995-98 | 2000 | 2002 | 2005 |
|----------------------|---------|---------|---------|--------|-------|------|
| Elephant | 600 | 420 | 250 | 374*** | 420 | 454 |
| Zebra | 500 | 450 | 400 | | 150 | 94 |
| Rothschild's giraffe | 400 | 160 | 8 | | 9 | 14 |
| Buffalo | 2,000 | 1,270 | 700 | | 1,800 | 2750 |
| Lelwel hartebeest | 3,000 | 1,400 | 60 | | 250 | 338 |
| Bright's gazelle | 350 | 200? | 5 | | n/a | n/a |
| Roan | 120 | n/a | n/a | | n/a | n/a |
| Eland | 300 | 200 | 50 | | 7 | 13 |
| Greater kudu | n/a | n/a | n/a | | 10 | n/a |
| Lesser kudu | n/a | n/a | n/a | | 10 | n/a |
| Oribi | n/a | n/a | n/a | | 1,000 | 39 |
| Reedbuck | n/a | n/a | n/a | | 300 | 50 |
| Lion | 50 | n/a | n/a | | 25 | n/a |
| Cheetah | 25 | n/a | n/a | | 10 | n/a |
| Ostrich | n/a | n/a | n/a | n/a | n/a | 90 |
| Waterbuck | n/a | n/a | n/a | n/a | n/a | 33 |
| Warthog | n/a | n/a | n/a | n/a | n/a | 42 |
| Baboons | n/a | n/a | n/a | n/a | n/a | 27 |
| Vervet monkey | n/a | n/a | n/a | n/a | n/a | 7 |

Data sources: Ross *et al* (1976), UNP (1971), Douglas-Hamilton (unpubl), Lamprey and Michelmore (1996), Moller *pers. comm*, ***Aleper & Moe (In Press) n/a = not counted

Table G-4. Population estimates of LMCA since 1992

| | 1992 ^a | Dec. 1995 ^b | May 1996 ^b | Oct. 1997 ^c | May 1998 ^c | Feb. 1999 ^d | July 2002 ^e | July 2002 ^f | June 2004 ^g | July 2004 ^h | Feb 2006 ⁱ | March 2009 | May 2010 |
|-----------------|-------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|------------|----------|
| Huts | 8611 | 7,068 | 5,435 | 6,130 | 6,552 | 6,730 | 5,795 | N/a | 6,957 | N/a | N/a | N/a | N/a |
| Cattle | 65,243 | 110,304 | 124,695 | 58,969 | 98,483 | 80,298 | 66,609 | N/a | 60,226 | N/a | 75,107 | N/a | N/a |
| Sheep/ goats | 11,026 | 7,259 | 7,594 | 7,819 | 10,199 | 9,601 | 13,019 | N/a | 14814 | N/a | 26,999 | N/a | N/a |
| Kraals | 1,792 | 1,066 | 1,088 | 1,457 | 874 | 1,156 | 944 | N/a | 300 | N/a | N/a | N/a | N/a |
| Impala | 18,691 | 6,599 | 7,442 | 6,817 | 4,124 | 1,595 | 2,956 | 2,374 | 3,300 | 3,119 | 4,705 | 35,772 | 20,946 |
| Zebra | 3,446 | 2,430 | 1,574 | 3,254 | 3,748 | 2,249 | 2,665 | 2,345 | 4,280 | 4,548 | 5,968 | 11,203 | 11,778 |
| Eland | N/a | 273 | 88 | 285 | 1,442 | 199 | 28 | 694 | 606 | 297 | 296 | 1,058 | 1,323 |
| Warthog | N/a | 571 | 480 | 964 | 559 | 550 | 493 | 1,141 | 560 | 1,070 | 741 | 1,672 | |
| Topi | N/a | 57 | 111 | 362 | 81 | 183 | 271 | 888 | 162 | 307 | 148 | 847 | 173 |
| Buffalo | N/a | 25 | 105 | N/a | N/a | 486 | 132 | 1,259 | 946 | 503 | 1,115 | 1,561 | 591 |
| Hippo | N/a | 51 | 76 | N/a | N/a | 303 | 97 | 272 | 213 | 973 | 357 | 150 | N/a |
| Water buck | N/a | 241 | 287 | 485 | 427 | 598 | 396 | 899 | 548 | 87 | 1,072 | 2,176 | 3,495 |
| Bush buck | N/a | N/a | N/a | N/a | N/a | N/a | N/a | | 76 | N/a | 70 | 3,292 | N/a |
| Baboon | N/a | N/a | N/a | N/a | N/a | N/a | N/a | | 1,093 | N/a | 375 | 2,196 | N/a |
| Duiker | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | 3,023 | N/a |
| Crocodile | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | N/a | 25 | N/a |

Table G-5. Population estimates for Toro-Semliki WR and Semliki Flats CHA, 1982, 1995 and 2002

| | 1982 | | 1995 | | | | 2002 | | | |
|-----------|-------|-------------|------|-----|-------------|-----|------|-----|-------------|-----|
| | TSWR | Semliki CHA | TSWR | SE | Semliki CHA | SE | TSWR | SE | Semliki CHA | SE |
| Buffalo | | | | | 41 | 38 | 219 | 202 | 49 | 46 |
| Elephant | | | 25 | 25 | | | 211 | 189 | 0 | 0 |
| Kob | 3,460 | 1,606 | 853 | 475 | 343 | 235 | 867 | 254 | 196 | 110 |
| Waterbuck | 33 | 8 | 5 | 5 | 5 | 5 | 58 | 41 | 0 | 0 |

Table G-6. Wildlife Population trends in Uganda

| Species | 1960s | 1982-1983 | 1995-1996 | 1999-2003 | 2004 - 2006 | Status in Uganda |
|----------------------|--------|-----------|-----------|-----------|-------------|---|
| Uganda kob | 70,000 | 40,000 | 30,000 | 44,000 | 34,461 | Population decreasing |
| Buffalo | 60,000 | 25,000 | 18,000 | 17,800 | 30,308 | Population increasing |
| Elephant | 30,000 | 2,000 | 1,900 | 2,400 | 4,322 | Population low, but slowly increasing |
| Hippopotamus | 26,000 | 13,000 | 4,500 | 5,300 | 7,542 | Population increasing slowly |
| Hartebeest | 25,000 | 18,000 | 2,600 | 3,400 | 4,439 | Population increasing slowly |
| Topi | 15,000 | 6,000 | 600 | 450 | 1,669 | Population increasing |
| Impala | 12,000 | 19,000 | | | 4,705 | Population low, but beginning to increase |
| Waterbuck | 10,000 | 8,000 | 3,500 | 6,000 | 6,493 | Population increasing |
| Burchell's zebra | 10,000 | 5,500 | 3,200 | 2,800 | 6,062 | Population increasing |
| Eland | 4,500 | 1,500 | 500 | 450 | 309 | Population low, may still be decreasing |
| Rothschild's giraffe | 2,500 | 350 | 250 | 240 | 259 | Population stable |
| Bright's gazelle | 1,800 | 1,400 | 100 | 50 | 0 | Very rare, precarious |
| Roan | 700 | 300 | 15 | 7 | 0 | Very rare, precarious |
| Oryx | 2,000 | 200 | 0 | 0 | 0 | Extinct in Uganda |
| Black rhino | 400 | 150 | 0 | 0 | 0 | Extinct in Uganda. |
| White rhino | 300 | 20 | 0 | 0 | 8 | 2 at UWEC and 6 in the sanctuary (Ziwa Rhino ranch) |
| Derby's eland | 300 | 0 | 0 | 0 | 0 | Extinct in Uganda |

**Table G-7. Chimpanzee Population Estimates (2002)
by A Plumtre, D. Cox & S. Mugume**

| Forest | Density (no Km ⁻²) | Nest building chimps | With correction factors | 95% Confidence Limits |
|-----------------------|-----------------------------------|-------------------------|----------------------------|--------------------------|
| Budongo FR | 1.35 | 580.80 | 639.41 | 392 - 796 |
| Wambabya FR | 3.62 | 123.84 | 136.34 | 117 - 156 |
| Bugoma FR | 1.90 | 570.00 | 627.52 | 467 - 847 |
| Kasato FR | 0.08 | 2.15 | 2.37 | 2 - 3 |
| Kagombe FR | 0.71 | 80.44 | 88.56 | 32 - 240 |
| Muhangi FR | 0.65 | 13.30 | 14.64 | 13 - 17 |
| Kibego FR | 0.75 | 9.58 | 10.54 | 9 - 12 |
| Itwara FR | 1.35 | 116.64 | 128.41 | 71 - 230 |
| Semliki NP | 0.21 | 45.55 | 50.15 | 43 - 57 |
| Rwenzori Mountains NP | 0.46 | 454.18 | 500.01 | 428 - 573 |
| Kibale NP | 2.32 | 1,298.08 | 1,429.08 | 899 - 1,778 |
| Kasyoha-Kitomi FR | 0.92 | 368.68 | 405.88 | 275 - 563 |
| Kalinzu FR | 1.55 | 212.62 | 234.08 | 132 - 418 |
| Maramagambo Forest | 0.46 | 202.01 | 222.39 | 190 - 255 |
| Bwindi NP | 0.60 | 193.24 | 212.74 | 182 - 243 |
| Otzi FR | | 25 | 27.52 | 20 - 40 |
| Semliki WVR | | 60 | 66.06 | 40 - 90 |
| Kyambura Gorge | | 50 | 55.05 | 30 - 70 |
| Kagorra region | 0.3 | 12.90 | 14.20 | 10 - 40 |
| South of Bugoma | 0.04 | 40.56 | 44.65 | 40 - 54 |
| Btn Bugoma & Budongo | 0.03 | 62.67 | 68.99 | 62 - 83 |
| TOTAL | | 4,505 | 4,962 | 4,000 - 5,700 |

Table G-8. Gorilla population trends in BINP and Virungas

| YEAR | 1986 | 1987 | 1989 | 1994 | 1997 | 2002 | 2003 | 2006 |
|----------|------|------|------|------|------|------|------|------|
| BINP | | 280 | | 257 | 292 | 320 | | - |
| VIRUNGAS | 293 | | 324 | | | | 380 | - |

Note: The Virungas is a continuous ecosystem consisting of Mgahinga Gorilla NP in Uganda, Virunga NP in Rwanda and Volcano NP in DR Congo.

Table G-9. Chimpanzee population trends in Uganda

| YEAR | 1989 | 1997 | 2003 |
|-------------|-------|-------|-------|
| Chimpanzees | 4,000 | 3,300 | 4,950 |

Table G-10. Estimates of Chimpanzee Populations in National Parks and Forest Reserves in Western Uganda

| Forest | Corrected Estimate |
|----------------------------|--------------------|
| Kibale NP | 1,429 |
| Budongo FR | 639 |
| Bugoma FR | 628 |
| Rwenzori Mountains NP | 500 |
| Kasyoha-Kitomi FR | 406 |
| Kalinzu FR | 234 |
| Maramagambo Forest | 222 |
| Bwindi Impenetrable NP | 213 |
| Wambabya FR | 136 |
| Itwara FR | 128 |
| Kagombe FR | 89 |
| Between Bugoma and Budongo | 69 |
| Toro-Semliki WR | 66 |
| Kyambura WR | 55 |
| Semuliki NP | 50 |
| South of Bugoma | 45 |
| Otzi WS | 28 |
| Muhangi FR | 15 |
| Kagorra region | 14 |
| Kibego FR | 11 |
| Kasato FR | 2 |
| TOTAL | 4,979 |

Source: Plumptre *et al* (2003)

ANNEX H: ADDITIONAL WETLAND INFORMATION

Table H-1. Ecosystem Services Provided by or Derived from Wetlands

| Services | Examples |
|--|---|
| Providing Ecosystem Services: <i>Products obtained from ecosystems</i> | |
| Food | Production of fish, wild game, fruits, and grains |
| Fresh Water | Storage and retention of water for domestic, industrial, and agricultural use |
| Fiber and Fuel | Production of logs, fuelwood, peat, and fodder |
| Biochemicals | Extraction of medicines and other materials from biota |
| Genetic Materials | Genes for resistance to plant pathogens, ornamental species, etc |
| Regulating Ecosystem Services: <i>Benefits obtained from regulation of ecosystem services</i> | |
| Climate Regulation | Source and Sink for greenhouse gases; influence local and regional temperature, precipitation, and other climatic processes |
| Water Regulation (Hydrological Flows) | Groundwater recharge and discharge retention |
| Water Purification and Waste Treatment | Retention, recovery, and removal of excess nutrients and other pollutants |
| Erosion Regulation | Retention of soils and sediments |
| Natural Hazard Regulation | Flood control and storm protection |
| Pollination | Habitat for pollinators |
| Cultural Ecosystem Services: <i>Non-material benefits obtained from ecosystems</i> | |
| Spiritual and inspirational | Source of inspiration; many religions attach spiritual and religious values to aspects of wetland ecosystems |
| Recreational | Opportunities for recreational activities |
| Aesthetic | Source of beauty or aesthetic value in aspects of wetland ecosystems |
| Educational | Opportunities for formal and informal education and training |
| Supporting Ecosystem Services: <i>Services necessary for production of all other ecosystem services</i> | |
| Soil formation | Sediment retention and accumulation of organic matter |
| Nutrient cycling | Storage, recycling, processing, and acquisition of nutrients |

Source: MA, 2005. In: WMD *et al*, 2009

Table H-2. Main Wetland Uses Inventoried in Uganda’s National Wetlands Information System

| Main Wetland Uses | Examples of Products and Services |
|--|---|
| Tourism | Bird watching, nature walks, education |
| Beekeeping | Honey and wax; pollination |
| Water collection and use | Rural domestic water, urban domestic water, water for livestock, industrial water, and irrigation water |
| Wastewater Treatment | Sewage Treatment |
| Fishing | Food and skins |
| Hunting | Meat, skins, and craft materials |
| Livestock Grazing | Meat, milk, and other livestock products |
| Natural Herbaceous Vegetation Harvesting | Food, fuel/firewood, craft materials, building/fencing materials, and medicines |
| Natural Tree Harvesting | Food, fuel/firewood, craft materials, building poles or timber, and medicines |
| Cultivation of Food and Fiber | Food and fiber |
| Plantation Tree Cultivation and Harvesting | Food, fuel/firewood, craft materials, building/fencing materials, and medicines |
| Mineral Excavation | Salt, clay, sand, gravel, gold, gemstones, and other minerals |
| Human Settlement | Housing and industrial development |

Source: Wetlands Inspection Division, 1996; In: WMD *et al*, 2009

ANNEX I: ADDITIONAL PROTECTED AREAS INFORMATION

Protected Areas of Uganda

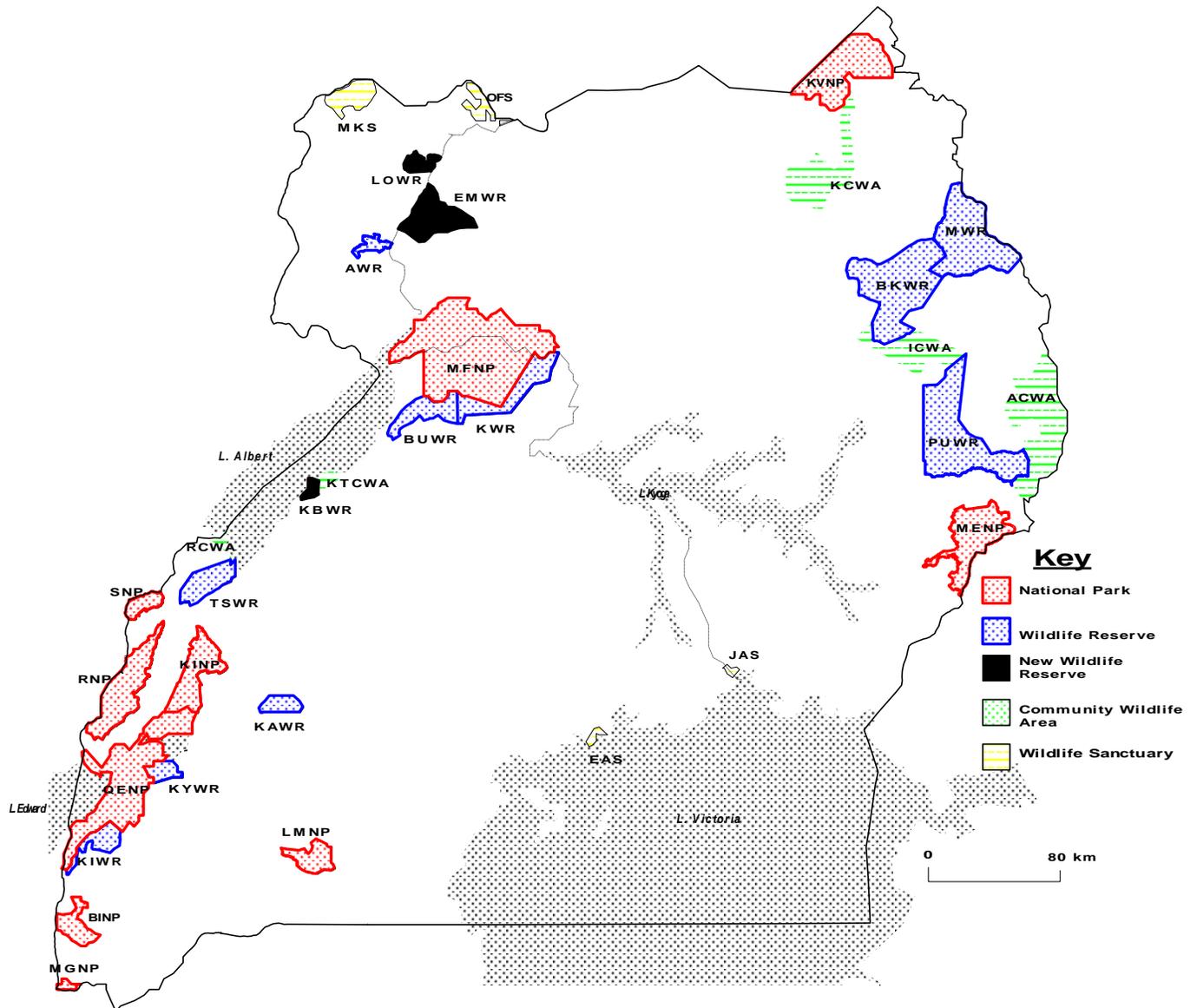


Table I-1

| National Parks | | Wildlife Reserves | | Community Wildlife Areas | | Wildlife Sanctuaries | |
|----------------|---------------------|-------------------|-----------------|--------------------------|-------------|------------------------------|-------------|
| BINP | Bwindi Impenetrable | AWR | Ajais's | ACWA | Amudat | EAS | Entebbe |
| KINP | Kibale | BKWR | Bokora Corridor | ICWA | Iriri | JAS | Jinja |
| KVNP | Kidepo Valley | BUWR | Bugungu | KCWA | Karenga | MKS | Mt. Kei |
| LMNP | Lake Mburo | EMWR | East Madi | KTCWA | Kaiso-Tonya | OFS | Otze Forest |
| MENP | Mt. Elgon | KAWR | Katonga | RCWA | Rwengara | Sanctuaries in QENP/Kyambura | |
| MFNP | Murchison Falls | KBWR | Kabwoya | | | | Kahendero |
| QENP | Queen Elizabeth | KWR | Karuma | | | | Kashaka |
| RNP | Rwenzori | KIWR | Kigezi | | | | Kayanja |
| SNP | Semuliki | KYWR | Kyambura | | | | Kazinga |
| MGNP | Mgahinga Gorilla | LOWR | Lomunga | | | | Kisenyi |
| | | MWR | Matheniko | | | | Rwenshama |
| | | PUWR | Pian-Upe | | | | |
| | | TSWR | Toro –Semliki | | | | |

Table I-2. Status of PA systems

| Name | Agent responsible | Date of Establishment | Protection status | Staff Numbers* | Size(Sq. Km) | GMP up to date |
|------------------------|----------------------------|-----------------------|-------------------|----------------|--------------|----------------|
| Mt Elgon NP | UWA | 1993 | NP | 71 | 1,110 | Available |
| Rwenzori Mountains NP | UWA | 1991 | NP | 67 | 995 | Available |
| Kibale Forest NP | UWA | 1993 | NP | 70 | 789 | Available |
| Queen Elizabeth NP | UWA | 1952 | NP | 250 | 2,056 | Available |
| Bwindi Impenetrable NP | UWA | 1992 | NP | 85 | 327 | Available |
| Semliki NP | UWA | 1993 | NP | 48 | 220 | Available |
| Mgahinga Gorilla NP | UWA | 1991 | NP | 41 | 38 | Available |
| Murchison Falls NP | UWA | 1954 | NP | 350 | 3,877 | Available |
| Kidepo Valley NP | UWA | 1962 | NP | 136 | 1,431 | Available |
| Lake Mburo NP | UWA | 1983 | NP | 46 | 370 | Available |
| Kabwoya | UWA, LG and Concessionaire | 1963 | WR | 15 | 87 | Available |

| Name | Agent responsible | Date of Establishment | Protection status | Staff Numbers* | Size(Sq. Km) | GMP up to date |
|-----------------|-----------------------------|-----------------------|-------------------|----------------|--------------|----------------|
| Toro-Semliki | UWA | 1926 | WR | 30 | 542 | Available |
| Kigezi | UWA | 1952 | WR | 24 | 265 | NA |
| Kyambura | UWA | 1965 | WR | 26 | 154 | NA |
| Katonga | UWA, LG and Concessionaire | 1964 | WR | 20 | 210 | NA |
| Karuma | UWA | 1964 | WR | 31 | 675 | NA |
| Bugungu | UWA | 1968 | WR | 37 | 473 | NA |
| Ajai | UWA, LG and Concessionaire | 1965 | WR | 23 | 148 | Available |
| Pian-Upe | UWA, LG and Concessionaire | 1965 | WR | 70 | 2,304 | NA |
| Bokora Corridor | UWA, LG and Concessionaire | 1964 | WR | 30 | 1,816 | NA |
| Matheniko | UWA, LG and Concessionaire | 1964 | WR | 45 | 1,757 | NA |
| East Madi | UWA, LG and Concessionaire | 1963 | WR | 21 | 829 | NA |
| Kaiso-Tonya | UWA, LG and Local community | 1963 | CWMA | | | NA |
| Lipan | UWA | 1963 | CWMA | 8 | | NA |

Source: UWA, 2000; Mwandha *et al*, 2003 * Staff numbers are 2002 Establishment

Notes:

Available: GMP is available and current

NA: Does not have a GMP but is covered in the main CA GMP

The table below provides a description of economic activities that are permissible in protected areas by category as provided for by the Wildlife Act (2000).

Table I-3 Permissible Economic Activities

| Function/Activity | National Park | Wildlife Reserve | Wildlife Sanctuary | Community Wildlife Area |
|---|--------------------|--------------------|--------------------|-------------------------|
| Protection of species, ecosystems and landscapes | Primary function | Primary function | Primary function | Added advantage |
| Protection of water catchments (economic benefits by supporting agriculture and industry) | Important function | Important function | Added advantage | Added advantage |
| Recreation, enjoyment of nature (Tourism) Economic benefits directly accrue | Important function | Important function | Important function | Added advantage |

| Function/Activity | National Park | Wildlife Reserve | Wildlife Sanctuary | Community Wildlife Area |
|---|--------------------------------|--|---|-----------------------------------|
| Extraction of biological resources; including vegetables, medicines, honey, poles, firewood, craft materials, fish, tubers, roots etc (high economic value not properly quantified) | Prohibited for animals only | Restricted for animals only | Restricted for animals only | Important function but controlled |
| Extraction of other resources e.g., water, minerals, oil, and gas (enormous economic potential but requires proper planning and monitoring). | Restricted (EIAs required) | Restricted (EIAS required) | No restriction but EIA required | No restriction but EIA required |
| Settlement | Prohibited | Prohibited | Permitted, except where WS is also a Forest Reserve | No restriction |
| Cultivation | Prohibited | Prohibited | Possible restriction | Possible restriction |
| Livestock | Prohibited | Prohibited, except for Karamoja Reserves | Possible restriction | No restriction |
| Charcoal/firewood/timber | Prohibited except for firewood | Prohibited except for firewood | Controlled | Controlled |
| Traditional ceremonial and ritualistic use, and extraction of medicinal plants | Under permit only | Under permit only, except for Karamoja Reserves where generally no restriction | Controlled | No restriction |
| Hunting | Prohibited | Under permit only | Controlled but under controlled | Under permit |
| Wildlife ranching/wildlife farming/sustainable wildlife trade | Prohibited | Under permit or MoU | Controlled | Encouraged |

Table I-4. Summary of importance of PAs and other areas for conserving biodiversity

Key:

BOLD: Internationally important plant community or wildlife species (IUCN listings)

BOLD: Nationally/regionally important plant community or wildlife species (IUCN listings)

Italics: Bird species

| Protected Area | Important for conserving these plant communities | Important for conserving these large species (occur in three or more parks/reserves). | Essential for conserving these large species (occur in only one or two parks/reserves). |
|-------------------|---|---|--|
| National Parks | | | |
| Murchison Falls | Forest, Savanna mosaic, Woodlands and Accacia | Chimpanzee, lion, elephant, hippopotamus, hartebeest, Uganda kob, <i>shoebill stork</i> | Nile crocodile, Giraffe (Rothschild's) |
| Queen Elizabeth | Medium altitude forests, Accacia, thickets grassland, Wetlands, | Chimpanzee, lion, elephant, hippopotamus, giant forest hog, Uganda kob, <i>shoebill stork</i> | Topi, <i>greater flamingo</i> |
| Kidepo Valley | Medium altitude forest, savanna grasslands, dry thickets | Lion, elephant, hartebeest, eland, klipspringer | CHEETAH, AFRICAN WILD DOG, zebra, giraffe (Rothschild's), Bright's gazelle, lesser kudu, Guenther's dikdik, <i>ostrich</i> |
| Lake Mburo | Acacia savanna | Hippopotamus, eland | IMPALA, zebra, topi |
| Bwindi Imp. | <u>Montane forest</u> | Elephant, giant forest hog | <u>MOUNTAIN GORILLA</u> , black-fronted duiker |
| Mgahinga Gorilla | <u>Montane forest</u> | Elephant, giant forest hog | <u>MOUNTAIN GORILLA</u> , GOLDEN MONKEY, black-fronted duiker |
| Rwenzori Mts | <u>Afro montane forest</u> | Elephant, giant forest hog | RWENZORI COLOBUS |
| Mt Elgon | <u>Afro montane forest</u> | | |
| Kibale | <u>Medium altitude forest</u> | Elephant, giant forest hog | RED COLOBUS |
| Semuliki | Medium altitude forest | Elephant, hippopotamus | BATES PYGMY ANTELOPE |
| Wildlife Reserves | | | |
| Katonga | Combretum savanna | Elephant, hippopotamus | |
| Kigezi | <u>Medium altitude forest</u> | Elephant, hippopotamus, Uganda kob | |
| Kyambura | Acacia savanna | Chimpanzee, lion, elephant, hippopotamus, Uganda kob | <i>Greater flamingo</i> |
| Karuma | Woodland | | |
| Bugungu | Dry thickets | Elephant, hartebeest | |
| Ajai's | Grassland/woodland | | |
| Pian Upe | Butyrospernum, combretum, acacia savanna, wetlands | Eland, hartebeest | ROAN |
| Bokora Corridor | Grasslands | | Bright's gazelle, <i>ostrich</i> |
| Matheniko | Acacia savanna, dry | | Bright's gazelle |

| Protected Area | Important for conserving these plant communities | Important for conserving these large species (occur in three or more parks/reserves). | Essential for conserving these large species (occur in only one or two parks/reserves). |
|--------------------------|--|---|---|
| | thickets | | |
| Toro/Semliki | Acacia grassland | Chimpanzee, lion, elephant, hippopotamus, giant forest hog, Uganda kob, <i>shoebill stork</i> | Red river hog |
| Sanctuaries | | | |
| Mt Kei | Butyrospernum savanna | | |
| Otze | Dry Forest | Chimpanzees, elephant | |
| Dufile | Dry Forest | | |
| Other Biodiversity Areas | | | |
| North Karamoja | Combretum and Accacia savanna | <i>Ostrich, Buffaloe</i> | Bright's Gazelle |
| South Karamoja | Butyrospernum savanna | Hartebeest, Zebra, Eland | Lesser kudu, Guenther's dikdik, Roan antelope, |
| East Madi | Dry forest,. Woodland and thicket | Chimpanzees, elephants, hartebeest | |
| Lipan | Woodland | | Greater kudu |
| Kaiso Tonya | Savanna mosaic | Uganda kob | |
| Semuliki Flats | Wetland | Elephants, Uganda kob, <i>shoebill stork</i> | |

Wildlife Systems Plan, 2000

ANNEX J – GAME CHANGING THREATS

Two threats were consistently noted by stakeholders as highly significant. In the language of the CDCS, these are “game changers.” Interestingly, the “game changing” threats to biodiversity are closely aligned to the two “game changing trends” noted in the CDCS: oil production and population growth. The two game changing threats to biodiversity are:

- Oil sector development (including ancillary features that support this development) could result in outright destruction of important wildlife habitat, and globally-important biodiversity.
- Widespread, frequent, and severe human-wildlife conflicts could undermine Uganda’s PA system. (Population growth is one of the drivers of the conflicts; climate change could exacerbate conflicts.)

During the five-year period of the CDCS, these game changing threats are expected to increase. This can largely be attributed to the transition from exploration to production in the oil sector, and Uganda’s high population growth rate. The following analysis focuses on these game changing threats, in combination with their root causes.

The Threat :

1) Oil exploration, production, and development of ancillary features could degrade and result in outright destruction of globally important biodiversity in the Albertine Rift.

Results of oil and gas exploration have shown substantial commercial quantities within Kabwoya Wildlife Reserve and Murchison Falls National Park and the adjoining areas. Exploration is ongoing in Queen Elizabeth National Park, Semilki, Bugungu, Ajai, and East Madi Wildlife Reserves. The entire Albertine Rift, where exploration works are happening and where production is poised to start by 2012 is a globally recognized biodiversity hotspot with seven of Uganda’s ten national parks and seven of Uganda’s Wildlife Reserves.

Now that oil has been discovered, there are proposals to extract and commercialize the deposits. Closely tied to the production activities will be the construction and renovation of support infrastructure such as roads and bridges, airports, and storage facilities to handle the equipment that will be brought in. In addition, oil infrastructure will include construction of pipelines and a refinery. Laborers and support staff will be brought in, and infrastructure will be built to accommodate them. An assessment of impacts to biodiversity from the oil sector must take into account these ancillary projects, as well as activities that are a direct result of oil exploration and development. The entire set of oil sector development activities could pose a threat to the survival of many of the important plant and animal species and if not undertaken responsibly, could result in outright destruction of important wildlife habitat.

The region is already suffering pollution damage from oil exploration (Katebaka, 2009). According to the Water Governance Institute, there are reports of water that has a foul smell along the River Wambabya system in Hoima District, and samples have been presented to the Uganda Government Chemist for further testing. Some of the exploration sites are located near wetlands that are on the List

of Wetlands of International Importance (Ramsar). These include the Murchison Falls-Albert Delta Wetland System and Lake George Ramsar site in Queen Elizabeth National Park.

The ETOA team held interviews with NGOs and individuals involved in the oil sector (those who are mainly concerned with environmental impacts of the oil sector), and visited oil exploration sites and sites affected by oil sector activities. Some of the ETOA team's observations were:

- a) In the MFNP to the north of the Nile and in the Kabwoya-Kaiso Tonya Wildlife Areas, numerous new roads have been opened to permit access to the sites of exploratory wells. In MFNP there are many "oil sector" roads in the same area where tourists are typically taken for wildlife viewing (north of the Nile River).
- b) At the site of the exploratory wells, the ground is levelled and all vegetation is removed. The site is fenced. According to Moses Dhabasadha, the Warden of KKTWA, the sites of exploratory wells measure 100 m by 100 m. After the exploratory drilling is completed the site is re-vegetated with native grasses except for an area 10 X 10 m where the well is. This area is fenced.
- c) At night the very bright lights of a Tullow Oil installation apparently in or close to the KKTWA could be seen from about 6 km away. The team was unable to determine if impacts of the lights were assessed, especially on wildlife, and if mitigation was incorporated, but doubtless there is an effect on wildlife. (According to the Warden, the lights are for a residential camp for people working for Tullow.)
- d) As the team drove the road from Hoima to KKTWA, recently built fences had been placed along considerable stretches to each side of the road. According to an interviewee, Rafael, these fences reflect the "land grabbing" that is going on within the oil exploration blocks, due to the expectations that people, including powerful businessmen and politicians from Kampala, have that land prices will rise as more people move into the area as a result of oil production.
- e) There is a new hotel that was built on the edge of the headquarters of the KKTWA. According to the Warden of KKTWA it is an investment of the Permanent Secretary who is responsible for NEMA to cater to oil workers. It is not a high end tourist hotel (in spite of its spectacular location overlooking Lake Albert) but a basic hotel.
- f) In the village next to the headquarters of KKTWA, according to Rafael, who lived there for several years when he worked as a boat builder, most are Congolese fishermen, who exchange their fish for gold in Congo, across the lake and sell the gold in Kampala. The environmental concern is that the oil boom could possibly attract more people from Congo into the area.
- g) The site of one exploratory well is within the community wildlife management area of the KKTWA and seemed to be fairly close to the shore of Lake Albert.
- h) According to the KKTWA Warden, drilling mud from the exploratory wells has been stored in sacks and piled in one site because Tullow doesn't know what to do with the waste. Tullow Oil has permitted him to monitor the sacks and he says that he has been to the storage site three times since he arrived there last November.
- i) According to Rafael, before the oil exploration began, the road to KKTWA was in terrible condition and it has improved a great deal. The ETOA team saw kob close to the KKTWA headquarters – under the current situation, they don't seem to be disturbed by the traffic on the road. This may also be the case for other grazing animals; however, the additional development during oil production could disrupt their behaviors. The effects of additional development will have to be evaluated on a project and location-specific basis.

Based on interviews, field observation, documents, and knowledge of oil sector development in other countries, oil sector development poses a significant threat to biodiversity in Uganda. During the early stage of development, Uganda has the opportunity to promote the mitigation of impacts from oil production, to ensure that it is undertaken in an environmentally and socially sound manner.

Actions Needed to Address the Oil Sector Development Threat

The ETOA team identified the following actions based on an analysis of site visits, interviews, and document reviews.

- 1) Access external technical expertise in environmental and social impact evaluation, mitigation, and monitoring of oil sector development.
- 2) Strengthen internal expertise of UWA, NFA, NEMA, and Wetlands Department to evaluate impacts, identify practical mitigation, and monitor oil sector activities.
- 3) Collaborate at policy/high government levels (USG and GOU) to encourage the strengthening of E/NR policies and to encourage appropriate government actions to mitigate potential environmental and social impacts of oil sector development.
- 4) Provide a quick response mechanism to access technical capacity in environmental and social aspects of oil sector development.
- 5) Raise awareness of the ongoing “land-grabbing” and the potential social and environmental impacts that are expected to result.
- 6) Strengthen CSOs to provide oversight of the oil sector, and of government actions, as well.
- 7) Support the formation of a biodiversity conservation fund to help offset environmental impacts, including long-term, unavoidable, and potentially unpredictable impacts associated with oil sector development.
- 8) Develop water quality monitoring plans and provide water quality monitoring equipment and training.
- 9) Develop emergency response plans; provide emergency response-oil spill equipment; provide training so staff can implement the plan and maintain equipment.

Table J-1: Oil Sector Development-Actions Needed & Extent to Which

| Actions Needed to Conserve Biodiversity in Response to the Oil Sector Threat | Extent to which proposed USAID actions meet the needs identified |
|---|---|
| 1) Access external expertise in oil sector environmental and social impact evaluation, mitigation, and monitoring of impacts. | The CDCS (DO I, IR 1.3) intends to use a “whole-of-government” approach which would involve accessing external expertise such as State Department and its Energy Governance and Capacity Initiative, Treasury, and USAID, with a focus on environmental implications of oil sector development. This meets the action needed. |
| 2) Strengthen internal capacity in oil sector and environmental and social impacts and mitigation of impacts. | See recommendations below which emphasize the need to integrate external expertise with host country systems and capacity strengthening. |
| 3) Collaborate at policy/high government levels (USG and GOU) to encourage appropriate government actions to mitigate potential environmental and social impacts of oil sector development. | The CDCS “whole-of-government” approach addresses this need. By providing this high level of support and collaboration, the USG could significantly influence the oil sector development process, as needed, to ensure that biodiversity conservation is adequately considered when designing and implementing oil sector development projects. |

| | |
|---|---|
| 4) Provide a quick response mechanism for oil sector-E/NR technical needs. | The CDCS approach could address this need; see recommendation below. |
| 5) Raise awareness of land-grabbing in the Albertine Rift by strengthening CSOs to disseminate information about this practice, which would include information on recourse that communities and individuals could take in the face of “land grabbing.” | The CDCS approach could address this need through a cross-sector link, see below. |
| 6) Strengthen CSOs to provide oversight of the oil sector and of government actions and to advocate for civil society and the environment. | The CDCS could address this need through a cross-sector link, see below. |
| 7) Support the formation of a biodiversity conservation fund to help offset environmental impacts and to cover mitigation measure cost. | The CDCS approach could easily integrate this need; see recommendations below |
| 8) Develop water quality monitoring plans and provide water quality monitoring equipment and training. | The CDCS could integrate this need; see recommendations. |
| 9) Develop emergency response-oil spill plans; provide equipment and training to ensure staff can implement the plans and maintain equipment. | The CDCS could integrate this need; see recommendations. |

Recommendations: Oil Sector Development

The following recommendations are based on the actions needed, extent to which USAID is addressing them (Table J-1), USAID’s manageable interest and comparative advantage, and proposed stakeholder interventions, including other donors.

1) To help build host country capacity, when accessing external expertise, include a component that integrates capacity strengthening for GOU partners, particularly UWA, NFA, WMD, NEMA, and district environment staff. Environmental assessment, mitigation, and monitoring of oil sector development activities require a specific set of expertise that staff in those agencies do not have. Given that oil was only recently discovered in Uganda, and that the GOU’s focus has been on strengthening capacity in oil exploration, production, and revenue management rather than on EIA, internal expertise in this area is still limited.

a) In coordination with the GOU, support outsourcing of EIA reviews and of monitoring mitigation measure implementation. NEMA currently relies on “lead agencies” for review of EIAs. This approach is ineffective as most lead agencies only designate some of their staff for this purpose among other responsibilities, often leading to delays or substandard reviews. For monitoring implementation of EIA mitigation measures, NEMA relies on District Environment Officers, who often lack capacity, and now, with the proliferation of districts, may be non-existent in certain districts. Besides strengthening GOU agencies to review and monitor oil sector EIAs, USAID should support an outsourcing mechanism, in coordination with GOU agencies, to help ensure that EIA reviews are not backlogged and that monitoring takes place in a timely, effective manner.

b) USAID’s capacity strengthening program could be undertaken in conjunction with Norway’s Oil for Development (OfD) program, which will support capacity building for government environmental agencies with tasks related to the petroleum sector. First, the OfD program will conduct a capacity needs assessment (first half of 2011). OfD expects that capacity strengthening needs will be identified that are beyond the ability of OfD to support. USAID could fill gaps in support.

2) Develop a mechanism that will allow for quick access of necessary external technical expertise so that environmental and social concerns can be addressed in the “private sector timeframe.” One criticism of environmental/social assessment and mitigation is that it is slow to respond, while oil development

moves along at private sector (rapid) speed. For example, given the slow start of the oil sector SEA, oil development activities have already proceeded without the SEA in place. For environmental concerns to be at the table along with other oil sector concerns, the environment sector must be able to respond rapidly and with practical, implementable, and budgeted solutions to problems. A “quick access mechanism” should be factored into the CDCS approach.

3) a) As part of cross-sector links to DO 2, CSOs should be used to raise awareness of the land-grabbing threat and the possible avenues of recourse that communities and individuals have.

b) Also within the manageable interest of DO 2, land registration and land dispute resolution should be linked to districts where land grabbing is occurring.

c) DO 2’s IR 2.2 is strengthening district land boards and IR 2.3 is reducing conflicts over land; these activities should be linked to the oil sector pillar to minimize the threat of land grabbing.

4) As part of cross-sector links to DO 2, CSOs should be strengthened to provide oversight of the oil sector and of government actions in oil sector development. CSOs in oil sector districts, as well as national-level CSOs should be provided with the tools they will need to advocate for citizens’ rights and environmental concerns. In addition, a platform for cooperation and coordination should be supported to ensure that CSOs are not working at cross-purposes and that they are advocating effectively and efficiently.

5) The CDCS “whole-of-government” approach should include support for the creation and technical assistance/oversight to manage a **Biodiversity Offset Fund**. There are successful models (from the U.S. and elsewhere) that can be used to create and manage this biodiversity offset mechanism. Regardless of any combination of mitigation measures there will be considerable negative impacts on biodiversity conservation arising out of oil works. A Biodiversity Offset Fund will provide the much needed long-term financing for ecosystem management in and around the parks, and will also provide for monitoring to ensure compliance with mitigation plans and continuous review as may be dictated by changing circumstances. Considering that much of the oil development will directly impact resources that are within UWA’s mandate to conserve and manage, UWA should be the agency to manage the Biodiversity Offset Fund.

6) To help mitigate potential impacts to water quality from oil sector development, the CDCS should include a component that focuses on water quality monitoring, including development of monitoring plans, provision of water quality monitoring equipment, and training.

7) To mitigate impacts from possible spills, the CDCS should include a component to help develop emergency plans and training to implement them; and should help identify measures and negotiate for financing of oil spill mitigation supplies and equipment and regular maintenance.

6) Some additional needs that have been identified by donors are:

a) Provide funds for the purchase of equipment to be used for oil spill emergency response training. USAID’s IR 1.3 could encourage private sector oil interests to purchase this equipment.

b) Provide support to conduct baseline studies in the Albertine Rift. While some aspects of the biodiversity of the Albertine Rift are well-known, there are many areas and resources that remain unknown and uninvestigated. Studies on the flora and fauna as well as on socioeconomic issues are needed. Studies could be undertaken and support provided by the oil sector; however, Ugandan counterparts should also be involved.

c) Support for ecosystem monitoring of the Albertine Rift. While the oil industry would be expected to support this, long-term monitoring would best be implemented by Ugandan counterparts, and additional funding may be needed to support this.

7) There are opportunities for public private partnerships with the oil sector, among them:

a) Waste management has already presented challenges and has resulted in environmental impacts. A public-private sector partnership could be facilitated in which the GOU would provide land and a private sector waste management company would set up a waste disposal facility.

b) Long-term monitoring of the impacts of ancillary features as well as the oil exploration and production infrastructure will require staff on the ground conducting monitoring, and data collected will have to be incorporated into a GIS that is kept current. A public-private partnership could be facilitated between UWA, which would provide staff, office space, and vehicles; and private sector companies that provide computer, IT, and software for the oil companies.

c) The Biodiversity Off-set Fund is a type of public-private partnership, where oil companies would provide the funds and UWA would manage them for the benefit of biodiversity and as a means of off-setting the inevitable impacts to biodiversity (this would not substitute for required mitigation). Oversight of the biodiversity off-set fund could be provided by an accounting firm that is working with the oil sector; this could be a third party to the public-private partnership.

d) Since tourism organizations in Uganda and outside and the Uganda Tourist Board promote tourism in the Albertine Rift, and some of tourism routes may be compromised by oil production, USAID could facilitate a public-private partnership between Uganda Tourist Board (UB), tourism organizations, and communities along some of the biological corridors with the greatest potential for conserving and for viewing wildlife. UTB and the tourism organizations could publicize visits to communities and to these corridors; communities could provide an extra level of protection for the corridors and the wildlife that uses them. The effects of oil production may mean that biological corridor conservation becomes even more important than it currently is (see conflict threat below).

Recommendations: Oil Sector Development

The following recommendations are based on the actions needed, extent to which USAID is addressing them (Table J-1), USAID's manageable interest and comparative advantage, and proposed stakeholder interventions, including other donors.

1) To help build host country capacity, when accessing external expertise, include a component that integrates capacity strengthening for GOU partners, particularly UWA, NFA, WMD, and NEMA.

Environmental assessment, mitigation, and monitoring of oil sector development activities require a specific set of expertise that many EIA practitioners may not be familiar with. Given that oil was only recently discovered in Uganda, and that the GOU's focus has been on strengthening capacity in oil exploration, production, and revenue management rather than on EIA, internal expertise in this area is still limited.

a) One of the key institutions whose capacity should be strengthened is NEMA – who, along with lead agencies are responsible for reviewing EIAs and monitoring implementation of EMPs. NEMA currently relies on “lead agencies” for review of EIAs. This approach is ineffective as most lead agencies only designate some of their staff for this purpose among other responsibilities often leading to delays or substandard reviews. When it comes to monitoring implementation, there is serious lack of capacity as NEMA relies on District Environment Officers, who often lack capacity, and now with the proliferation of districts may be non-existent in certain districts. The capacity of NEMA to handle the review and

monitoring of oil sector EIAs should be strengthened, but also, the mechanism for out-sourcing expertise should be promoted rather than relying solely on lead agencies.

b) USAID's capacity strengthening program could be undertaken in conjunction with Norway's Oil for Development (OfD) program, which will support capacity building for government environmental agencies with tasks related to the petroleum sector. First, the OfD program will conduct a capacity needs assessment (first half of 2011). OfD expects that capacity strengthening needs will be identified that are beyond the ability of OfD to support.

2) Develop a mechanism that will allow for quick access of necessary external technical expertise so that environmental and social concerns can be addressed in the "private sector timeframe." One criticism of environmental/social assessment and mitigation is that it is slow to respond, while oil development moves along at private sector (rapid) speed. For example, given the slow start of the oil sector SEA, oil development activities have already proceeded without the SEA in place. For environmental concerns to be at the table along with other oil sector concerns, the environment sector must be able to respond rapidly and with practical, implementable, and budgeted solutions to problems. A "quick access mechanism" should be factored into the CDCS approach.

3) a) As part of cross-sector links to DO 2, CSOs should be used to raise awareness of the land-grabbing threat and the possible avenues of recourse that communities and individuals have.

b) Also within the manageable interest of DO 2, land registration and land dispute resolution should be linked to districts where land grabbing is occurring.

c) DO 2's IR 2.2 is strengthening district land boards and IR 2.3 is reducing conflicts over land; these activities should be linked to the oil sector pillar to minimize the threat of land grabbing.

4) As part of cross-sector links to DO 2, CSOs should be strengthened to provide oversight of the oil sector and of government actions in oil sector development. CSOs in oil sector districts, as well as national-level CSOs should be provided with the tools they will need to advocate for citizens' rights and environmental concerns. In addition, a platform for cooperation and coordination should be supported to ensure that CSOs are not working at cross-purposes and that they are advocating effectively and efficiently.

5) The CDCS "whole-of-government" approach should include support for the creation and technical assistance/oversight to manage a **Biodiversity Offset Fund**. There are successful models (from the U.S. and elsewhere) that can be used to create and manage this biodiversity offset mechanism. Regardless of any combination of mitigation measures there will be considerable negative impacts on biodiversity conservation arising out of oil works. A Biodiversity Offset Fund will provide the much needed long-term financing for ecosystem management in and around the parks, and will also provide for monitoring to ensure compliance with mitigation plans and continuous review as may be dictated by changing circumstances. Considering that much of the oil development will directly impact resources that are within UWA's mandate to conserve and manage, UWA should be the agency to manage the Biodiversity Offset Fund.

6) Some additional needs that have been identified by donors are:

a) Provide funds for the purchase of equipment to be used for oil spill emergency response training. USAID's IR 1.3 could encourage private sector oil interests to purchase this equipment.

b) Provide support to conduct baseline studies in the Albertine Rift. While some aspects of the biodiversity of the Albertine Rift are well-known, there are many areas and resources that remain unknown and uninvestigated. Studies on the flora and fauna as well as on socioeconomic issues are

needed. Studies could be undertaken and support provided by the oil sector; however, Ugandan counterparts should also be involved.

c) Support for ecosystem monitoring of the Albertine Rift. While the oil industry would be expected to support this, long-term monitoring would best be implemented by Ugandan counterparts, and additional funding may be needed to support this.

The Threat

1) Widespread, frequent, and severe human-wildlife conflicts could undermine Uganda's PA system. (Population growth is one driver of the conflicts; climate change could exacerbate conflicts.)

Conflicts over land-use are mainly between the wildlife and the individuals who live and farm land adjacent to wildlife PAs. While Uganda's principal attraction for tourists is the wildlife they can see in its national parks and reserves, the savannah habitats upon which the grazing animals depend are being displaced by woodland habitat. Consequently, some species of animals move outside of the protected areas seeking food and water. UWA is still plagued by an outdated management style of "resource custody" as opposed to a more dynamic and scientifically based ecosystem approach. If UWA fails to change its approach from conflict management to ecosystem management, increased incidences of human-wildlife conflict are expected to result as a direct result of the high human population growth rate around the PAs. This could result in political decisions to minimize the size of PAs or in complete de-gazettement of some PAs.

Conflicts originate both within and outside of Uganda's national parks and wildlife reserves. Within them, populations of some species of animals have increased and woodlands have spread across extensive areas of former grasslands (Obong, T., Dricuru, M, Oryema, A. Tusubira, J. per.com 2011; Kernan, B., Waiswa, G., field observations, 2011). The Acting Director of the UWA emphasizes that "...Invasive species of plants are having a huge effect on the protected areas and are forcing animals to move out of them into surrounding areas causing conflicts..." (Seguya, A per. com. 2011). Tom Obong, the Conservation Area Manager for MFNP confirmed this observation: "...the Southern sector of the park has been taken over by forest..." as did John Kasangaki, an employee of UWA for over 40 years: "...before this was all grassland..." (Kasangaki, per. com. 2001). Outside the conservation areas, human populations have increased, cropland and pastures have replaced large areas of natural vegetation, and formerly open access grazing land has become privately owned and fenced (Kernan B.; Waiswa, G., field observations, 2011; Johns, A. G. per. com 2011). Some species of animals move outside the boundaries of conservation areas, following migration routes and looking for food and more safety from their predators. When they eat grasses and crops (McNeilage A. ; Plumptre, A.; Brookhuis, J.; per. com. 2011; Rwetsiba et al 2009) and attack humans (Bosco O. J.; Emmanuel, O.; per. com. 2011; Kasooha, I. 2011) they can severely reduce the income of the poorest segment of the local population and they can threaten lives.

Local people attribute crop raiding, livestock killing, and damage to property to wild animals from protected areas, such as elephants, hippopotamus, lions, and leopards. Lions, monkeys, and baboons are often shot or poisoned to prevent attacks on livestock or crop raiding (about 40 baboons were shot in January 2011, according to the New Vision; they are considered vermin and their control is legal). Human-wildlife conflicts between crocodiles and hippos regularly result in shooting of these animals.

Those who live adjacent to PAs may illegally exploit resources from within the conservation areas in order to survive (Brown, M. 2005). Migrant pastoralists, whose access to grazing land and water has been restricted by the establishment of conservation areas and fenced private property, seek to graze and

water their livestock within conservation areas, sometimes causing degradation of soil and vegetation (Kernan, B., Waiswa, G. per. obser. 2011; Oryema, A. Tusubira, J. per.com 2011).

UWA, although a well-organized and professional institution, still lacks sufficient capability to manage these conflicts effectively. Consequently, politicians, in response to public pressure, are likely to react by promoting, or ordering, short-term, emergency measures, such non-selective killing of animals, reducing the size of or eliminating conservation areas, and/or constructing fences and trenches along their boundaries (Bosco O.J., Tusubira, J. per. com. 2011). Such measures would be likely to reduce the genetic diversity of some animal species, decreasing their ability to adapt to rapid, permanent changes in climatic conditions, and thus reducing the probability of their long-term viability. Dr. Plumptre, a wildlife scientist in the Uganda office of the Wildlife Conservation Society used the example of the mountain gorilla: "...the threat to the gorillas in Bwindi Impenetrable National Park has been reduced ...and the gorilla population is stable...it is very small and fragile and could be wiped out in a year due to the introduction of a disease, elimination of habitat, possibly due to a change in the climate..." (Plumptre, A. per.com. 2011).

Moreover, there will be little public support in general and almost no local public support for maintaining the protected areas, especially when fencing and ditching costs are high and often fail to control the damage (in addition to the impacts they have on wildlife). The lack of well protected migration corridors exacerbates this threat – without protection of the historical connection between Uganda's PAs, wildlife are risking their lives, and the lives of humans, and can affect livelihoods (crops, livestock, homes) when they go beyond the borders of PAs.

The ETOA team found that quantitative data were lacking on the number and types of conflicts that are occurring in Uganda between wildlife and humans in the areas adjacent to its different conservation areas. Nonetheless, qualitative data obtained through interviews clearly indicated that such conflicts are common and widespread:

(a) In the conservation areas of the Albertine Rift region (Emmanuel, O., Plumptre, A, Brookhuis, J, MacNelge, A., Kairu, G., Obong, T., Oryema, A., per. com. 2011) and Blomley, T. et al. 2010 and Brown, M. 2005 provide more detailed analyses of the frequent conflicts between the animals that inhabit the Bwindi Impenetrable National Park, the Bwindi Mgahinga Conservation Area, and other conservation areas in southwestern Uganda and the human population in their surrounding landscape.

(b) The same sources indicated to Kernan and Waiswa that changes in habitat, combined with other factors such as an increase in the population of some animal species, increases in human populations, and cropland and livestock in the landscape surrounding the conservation areas, and the activities associated with exploration for oil, have combined in various degrees to cause an increase in the frequency of conflicts between wildlife that spends part of their life cycles within conservation areas and the humans who live in the landscapes that surround these areas.

(c) Rwetsiba et al (2009) indicates that the populations of some grazing animals have increased over the last 10 years on the ranches in the landscape that surrounds the Lake Mburo National Park and concludes that conflicts between this wildlife and humans are inevitable, given that the wild animals utilize the same food, water and salt as domestic livestock.

(d) Brown, M. et al. (2005) concluded that the communities on the borders of the protected areas in southwestern Uganda "...subsidize protected area biodiversity conservation..." through the loss to some farmers of from 40 to 90% of their crops during a growing season to wild animals.

(e) John Bosco Okullu, the chairperson of the local council of Koci Goma Sub country, four of whose six parishes lie adjacent to the northern boundary of Murchison Falls National Park commented "...the elephants come regularly every year between June 14 and June 22 in three different groups, one of 80,

the other of 5 and the third of 36...CARE is financing the digging of a trench that is two meters deep and two meters wide along the boundary of Murchison Falls National Park to keep the elephants from crossing into the cropland... the boundary on the northern side is about 170 km long.”

(f) Tom Obong, the Conservation Area Manager of the Murchison Falls National Park was cited in the January 20, 2011 edition of the newspaper *New Vision* as saying that 21 people were killed by hippopotamus in or on the borders of the park during 2009 and 2010

Of note for USAID and the CDCS (DO 1, IR 1.3) is that tourism based on Uganda’s unique biodiversity generates several hundred million dollars of foreign exchange annually; this is the first to the third highest source of revenue for Uganda (statistics differ on this ranking). The tourism industry, especially for eco-tourism, is expected to continue to grow, and this can be a source of revenue for Uganda in perpetuity. However, without conservation of its PAs, this revenue source will be lost.

Actions Needed to Address the Conflict Threat

Based on an analysis of interviews, site visits, and documents, the ETOA team identified the following actions needed to address the threat that conflict poses to Uganda’s biodiversity, and indirectly, to Uganda’s tourism industry:

1) **Strengthen political will both at central and local government level:** The political will to conserve Uganda’s biodiversity, in particular, the almost 10 % of its terrestrial area that has been gazetted as conservation areas, needs to be strengthened. PA policies have not been implemented effectively and frequently are given low priority when they conflict with other public policies, some of which could stimulate the destruction of biodiversity within the PAs. Without steady, permanent political leadership that can effectively implement conservation policies and reconcile them successfully with other public policies, it will impossible to permanently conserve the biodiversity that currently exists within Uganda’s conservation areas.

2) **Implement a harmonized, collaborative approach especially targeting local governments rich in biodiversity resources:** The legislation establishing NFA NEMA, and UWA provide for formation of local government committees to help address issues concerning the mandates of the respective agencies at local government level. This translates to three separate committees; in some districts, there is a fourth, a natural resource committee. However, these run in parallel with the UWA Community Protected Area Institutions (CPI) through which the 20% of revenue sharing funds from UWA PAs are channeled. NEMA and NFA have local government staff at districts – something that UWA lacks, so collaboration between UWA, NFA, and NEMA could also benefit UWA.

3) **Strengthen capacity to manage conflicts through an ecosystem, landscape-based approach:** UWA’s capabilities for managing conflict between the conservation areas it manages and the people in the surrounding landscape need to be strengthened. Effective practice of biodiversity conservation requires the constant collection and analysis of biological and social field data from in and around the national parks and wildlife reserves, and the application of the results so that management actions can be formulated. Currently, UWA manages its PAs by managing conflicts (poaching, illegal collection of resources, encroachment for livestock grazing and agricultural land; and crop raiding, livestock killing). These can be more effectively and sustainably managed through ecosystem management approaches that allow for joint/participatory planning and implementation with respective local governments in a given landscape.

Importantly, biodiversity threats need to be addressed through a holistic approach that takes on the ecosystems and the socio-economic-environmental landscape. The focus must be on primarily managing the ecosystem from a landscape perspective – what has also been called the socio-ecological approach to biodiversity and natural resource management. This is the approach USAID should assist the GOU to

adopt by strengthening UWA through re-orienting some of its key staff into “systems science and management”; an approach that South African National Parks has embraced over the last decade with much success.

4) **Conserve corridors as part of the landscape approach:** UWA should manage its gazetted conservation areas, as part of a larger landscape that includes migration corridors and easements that allow for other movement of animal populations. Without the protection of movement and migration corridors the genetic diversity of many of Uganda’s wildlife will be at risk, and with wildlife still following traditional migration routes, populations remain at risk once they leave the PA. The legal framework provides for establishment of local government wildlife reserves and even private reserves. Local governments should be supported and assisted to create and gazette local wildlife reserves that will serve as corridors and dispersal/buffer areas. Some local governments neighboring Murchison Falls Conservation area have already expressed interest in this.

5) **Sufficient financing for Uganda’s NR institutions and for managing its conservation areas:** Inadequate levels of funding do not permit the achievement of management objectives and will result in inadequate and deteriorating infrastructure, demoralized staff, and inefficient, ineffective operations. Without a sustained and predictable source of funding, PA management will continue to be based on resolving individual conflicts rather than on ecosystem management, and this approach continues to place Uganda’s PAs at risk – it is management after the damage has already been done. The ultimate goal should be to move Uganda away from dependence on donor funds to finance their PAs.

Actions Needed and Extent to Which USAID is Addressing the Actions

Table J-2 summarizes the extent to which current and proposed USAID actions address the needs. Currently, the principal actions that USAID/Uganda finances related to conservation involve the STAR and the WILD Projects. The actions of the former are intended to stimulate the expansion of nature-based tourism in Uganda, with the rationale that by doing so, conservation areas will generate economic growth and thereby increase the funds available for conservation actions. The WILD Project supports actions that will increase the scientific knowledge available for management decisions related to conservation areas and actions that are intended to directly reduce encroachments of humans into conservation areas. WILD is ending in summer of 2011, and so is not included in the table below. STAR is expected to continue well into the CDCS timeframe.

Table J-2: Actions Needed to Address the Threat of Conflict and Extent to Which USAID Meets the Actions Needed

| Actions needed to address the threat of PA-land-use conflict | Extent to which proposed USAID actions meet the needs identified |
|--|---|
| 1) Strengthen political will at central and local government level | No provision for strengthening political will to support the PA system. |
| 2) Implement a harmonized, collaborative approach especially targeting local governments rich in biodiversity resources | No provision for support for implementing a harmonized, collaborative approach. |
| 3) Strengthen capacity to manage conflicts using an ecosystem-based landscape level approach. | No training in ecosystem management and in other measures that would reduce conflicts in a sustainable manner. |
| 4) Conserve corridors as part of the landscape approach | No provision for conservation of corridors. |
| 5) Sufficient financing for Uganda’s NR institutions and for managing its conservation areas, including local government-collaborative management agreements | The CDCS continues promotion of private investment in nature-based tourism as a means to generate income, some of which could be dedicated to conservation (if the income is generated by UWA or NFA). No provision for promoting other sources of financing for conservation institutions. |

Recommendations: Conflicts over Land Use

The CDCS expects the focus on tourism, specifically ecotourism, to help mitigate resource base degradation to protect future value (IR 1.3). The ETOA team believes that based on the threats identified, in particular the threat of conflicts of land use, support for ecotourism may not adequately address the threat, and the base for ecotourism – Uganda’s PA system could be undermined by the threat of conflict. Recommendations to address the threat to a greater extent than is currently planned for in the CDCS and to fill gaps that are in need of support are described below.

The approach these recommendations takes is based on lessons learned from APE, COBS, and PRIME/W, with a focus on the successful aspects of each: the successful approach of the APE and COBS projects in placing TA at UWA; the success of the landscape focus used by PRIME/W. The recommendations incorporate a threats-based, ecosystem approach, and favor working through local and central level government since they are the institutions mandated to protect biodiversity in Uganda. Rather than an ecosystem approach, much of previous support was for “one-off” activities so common under PRIME/W, usually supporting an NGO or CBO to implement them (cleaning up Buhoma, lighting a bat cave), which have little to show for them once the USAID project is ended. The threat of conflict over resources requires a more strategic and sustainable approach.

In addition, prior to implementing an overall program to address this threat, USAID should collaborate with the key Ugandan institutions to identify specific activities to support – this is an area that many interviewees criticized USAID for lack of collaboration with GOU institutions; acting independently of the institutions mandated to protect Uganda’s biodiversity.

1) Strengthen political will: As part of USAID’s support for improved governance at district level, politicians should be engaged to address biodiversity conservation issues as part of good governance and as part of larger economic growth programs. This could be considered a cross-sectoral link with DO 1 and DOs 2 and 3.

2) Promote a harmonized, collaborative approach: Based on the existing governance structures and the lead UWA has already taken in implementing a collaborative approach with local governments, IR 1.3 should help strengthen Community Protected Area Institutional (CPI), which bring together several districts, in line with a given landscape, to enhance harmonization and collaboration in E/NR management. This institution could be the basis of addressing human-wildlife conflicts (rather than previous interventions which were only minimally based on or in any institutional framework). The CPI can be used to spread the benefits of conservation beyond PAs and district boundaries.

3) Promote ecosystem-based landscape approach

3a) Strengthen the capacity of UWA to manage conflicts over land use through an ecosystem approach that is based on sound scientific information. Capacity strengthening could involve placing a long-term TA in UWA (as USAID/APE and COBS did for PA planning; or it could involve on-the-job training programs. (Capacity strengthening should not be implemented through the over-used and abused “workshop.”) While the specific terms of reference can be worked out between USAID and UWA if this recommendation were to be implemented, the TA should be placed within the Research and Monitoring Unit of UWA and should be a full-time staff position, but with a limited appointment.

3b) Strengthen capacity of UWA in applied research and data analysis. Over the past decade, UWA has emphasized the use of applied research to address management challenges, but has had little success in applying the results of research. Although there is a Research and Monitoring Unit within the Conservation Department at UWA headquarters and it is linked to and has staff in most of the PAs, the existing staff do not have the requisite skills to undertake applied research and funding is inadequate. For the ecosystem management approach to be adopted, capacity must be strengthened to undertake

applied research. Rather than supporting the (re)creation of a separate research wing or unit (similar to NFA's), the existing institutional structure at UWA should be targeted for capacity strengthening.

4) Conserve corridors: USAID has made significant investments in PA corridors, yet these are not legally protected, and they are shrinking as human populations encroach. If they are not protected as soon as possible, the corridors will be entirely encroached, and no longer available for wildlife movement. This will create an even greater risk for wildlife and for Uganda's biodiversity and PA system. USAID should continue to support corridor protection through various mechanisms: private investment (GDAs), financing from the oil sector, and direct gazetting of corridors by the GOU for management by local governments with technical backstopping from UWA or NFA.

For example:

i) USAID could provide assistance to owners of forest patches on private lands in potential biodiversity corridors between Itwara, Muzizi/Kangombe, Bugoma, Wambabya, and Budongo CFRs and Murchison Falls NP. Assistance is needed to prepare resource management and business plans and to develop sustainable forest based enterprises to offset opportunity costs associated with forest retention; and to register their forests as Private Forests as provided in the National Forestry and Tree Planting Act, 8/2003 to secure their rights to the forest resources and to promote sustainable forest management through enabling participation in carbon credits markets and related schemes such as payment for ecosystem services. This could be implemented as a cross-sector link with DO 2.

ii) The WWF-implemented Wildlife Corridors Project in Kibale and Kyenjojo Districts has been ongoing for many years, and has yet to show real success. With leveraging by USAID for local government support and private sector investment, this project could be moved forward and could then serve as a model for additional corridor protection.

5) Sufficient financing for Uganda's NR agencies

5a) Help UWA to identify, plan, promote, and implement actions to increase the funds available to UWA for PA management from government funds, special funds (oil sector and other possibilities), international private sector foundations, and tourism revenue.

b) Support local governments in efforts to strengthen collaborative management of wildlife management areas. USAID should provide assistance for local governments to create and manage local wildlife reserves in areas that naturally act as wildlife corridors and dispersal/buffer areas. Local government is key to biodiversity conservation in the greater landscape – beyond the PA borders.

ANNEX K – DONOR-FUNDED E/NR SECTOR ACTIVITIES AND SUMMARY OF USAID INVOLVEMENT IN THE E/NR SECTOR

The following table provides information on donor funded activities in the E/NR sector. Where there are gaps in information (funding level, life of project, etc.), the information was unavailable to the ETOA team. Approximately 83% of Uganda’s total E/NR budget in 2009/2010 was contributed by donors.

Table K-1 Donor-funded E/NR Sector Activities

| Donor | Project Name | Activities Supported | Years/Funding |
|------------|---|--|-----------------------|
| USAID | Wildlife, Landscapes, and Development for Conservation (WILD) Implementing Partners: WCS, UWA, NFA, Gulu University, JGI, WCU, Tree Talk, NEMA | Reduce threats to biodiversity and conserve critical ecosystems and species across diverse landscapes in the Albertine Rift and in the north through: biodiversity management; environmental education and communication; property rights and resource governance; improved livelihoods; and natural resource management. | 3 years \$6.5 million |
| | Sustainable Tourism in the Albertine Rift IPs: various public and private sector partners involved in the tourism sector | Increase visitor spending in communities and businesses surrounding targeted protected areas, to create alternative livelihoods that will reduce conservation threats in these protected areas and to boost support for conservation activities in the region. Specific activities include: targeted TA and training to strengthen enterprises; working with national and regional institutions to strengthen their ability to support tourism and conservation in the Albertine Rift and communities; linking local enterprises with nearby lodges to provide a local sales outlet and a connection for TA and support from the lodge; encouraging lodges and tour operators to support community enterprises; improving media coverage about sustainable tourism issues, including tourism products, to promote an increase in domestic tourism. | |
| | Feed the Future | Climate change adaptation as a cross-cutting activity in FTF programming | |
| World Bank | Environmental Management and Capacity Building Project II | District solid waste management; priority petroleum sector activities | 2001-2011 |

| Donor | Project Name | Activities Supported | Years/Funding |
|---------------------------|--|---|---|
| | GoU counterparts: NEMA & NFA | (environmental management); institutional strengthening (NEMA); tree planting and sustainable forest use (NFA) | \$33 million |
| | Protected Areas Management and Sustainable Use Project (PAMSU) | Maintain cost-effective and efficient wildlife management inside & outside Protected Areas (UWA); public awareness and knowledge in environmental and conservation issues created (UWEC); develop the framework for the tourism sector of the economy to the maximum extent possible, consistent with the protection of environmental and cultural values (MTTI); the cultural heritage of Uganda preserved (museums) | \$21 million [over unknown # of years] Expires 2012 |
| | Nile Basin Reforestation | carbon offset project (Rwoho) | |
| | REDD Preparedness | Forest Carbon Partnership Facility | |
| World Bank & other donors | | Capacity strengthening in the petroleum sector (Energy and Minerals Donor Group) | |
| Norway | Institutional support to NFA GoU counterpart: NFA | Financial and technical support to NFA; increase focus on forest restoration in Northern Uganda; funding for REDD preparedness | app. \$11.5 million, 2009-13 supported since 2004 |
| | Sawlog Grant Production Scheme (SPGS), 2 Counterpart: private sector (supported as part of EU) | establishment of private commercial plantations and support thereof | app \$6 million |
| | Support to Uganda Timber Growers Association (UTGA) | The Norwegian Forest Owners' Organization has an agreement for institutional cooperation with UTGA. | 2009-2013 |
| | The Mount Elgon Regional Ecosystem Conservation Program (MERECP) | Transboundary program (Kenya, Uganda) for sustainable management of PAs and poverty eradication through promotion of alternative income opportunities for the local population | |
| | Framework agreement between NORAD Oslo and WWF-Norway. | Support for environmental activities, the main projects under this agreement are Rwenzori Mountains Conservation and Environmental Management Project, Lake Albert Eastern Catchment Management Initiative, and Semliki Water Resources Management Project. | |
| | Oil for Development Program | Institutional support project with 2 pillars: environment management; human resource management; financial resource management. The Environment Management Pillar (2011) will: conduct the SEA; develop and implement capacity strengthening program; prepare management plans for PAs (MFNP, South Maramagambo, Bugoma, and Budongo FRs and finalization of report for QEPA MP); develop an environmental monitoring system; develop and/or revise environmental regulations and standards; develop mechanisms for handling oil and gas industry waste; strengthen framework for | 5 years app.\$2.5 million (EM pillar for 2011) |

| Donor | Project Name | Activities Supported | Years/Funding |
|---------------------|---|---|-------------------------------|
| | | compliance monitoring and enforcement; and develop and operationalize National Oil Spill Contingency Plan. | |
| African Devel. Bank | Income Enhancement and Forest Conservation Project (FIEFOC) GoU counterpart: MoWE/FSSD | Forestry support, which aims at re-vegetating 9,900 ha of degraded watershed, protecting 99,000 ha of natural forests, and establishing 13,500 ha of plantations; agricultural enterprise development, focuses on small-scale irrigation and crop development | 2006-2012 app \$60 million |
| Belgium | Clean Development Mechanism Capacity Development and Project Support GoU counterpart: MoWE/CCU | To strengthen technical capacity on CDM project formulation and create awareness of investment opportunities under the CDM among governmental institutions and project developers, including financing institutions. | 2 million Euro |
| Denmark | Environmental aspects of climate change adaptation and mitigation GoU counterpart: CCU/MoWE This is a package of three projects | Strengthening of Climate Change Unit; mainstreaming climate change adaptation in all relevant sector activities; preparation of Uganda's participation in COP 15 including follow-up | \$ 1.9 million 2008-2012 |
| | Tree Talk Plus – Greening Uganda Counterpart: Straight Talk Foundation – NGO | Improve knowledge about climate change adaptation and mitigation and build resilience among communities; strengthen conservation of key ecological units for the sustainable development of surrounding communities, promote ecologically responsible natural resource management and economic livelihood options among the target communities. The target area is Adjumani, Amuru, Gulu, Kitgum, and Pader districts and the main outputs are: 4.4 million trees planted, 2,600 people trained in conservation and climate adaptation and 1 million people reached through communication/ awareness campaign | \$0.8 million 2010-2012 |
| DfID | Recovery in Northern Uganda | To create economic, social, and political opportunities that improve the lives of people affected by conflict in northern Uganda, maximize the benefits of peace and promote national reconciliation | 90 million pounds |
| EU | Providing Access to Modern Energy in Northern Uganda (PAMENU) GTZ-implementing partner | Provide access to modern energy services to rural HHs, social institutions, and SMEs | 2.4 million Euros |
| | Mainstreaming in EU's 2 focal sectors (Rural dev and transport/roads) | SEA of the road sector in 2010; systematically do EIAs for large infrastructure projects; a study on environmental fiscal reform (2009), which included Uganda among other countries; together with WB, the EU has promoted environment and CC mainstreaming in the agriculture DSIP and an SEA is envisaged for the future; various projects have a clear environment/CC dimension, such as (i) the Karamoja Livelihoods Project (15 million Euros) and the ECHO funded Drought Preparedness Project (regional; 4 million Euros for Uganda), which | |

| Donor | Project Name | Activities Supported | Years/Funding |
|-------------|--|--|---|
| | | promote adaptation to CC in Karamoja; (ii) the Implementation of a Fisheries Management Plan for Lake Victoria (30 million Euros) which aims at supporting national and regional institutions for the sustainable management of fish resources. | |
| GTZ | Reform of the Urban Water and Sanitation Sector III (RUWASS III) Climate Change component GoU counterpart: MOWE/DWRM and DoM | Support Uganda with adaptation measures to the impacts of Climate Change | 2008-2011 \$4.8 million |
| FAO | Support for the Rehabilitation, Development and Sustainable Management of Forest Resources in N. Uganda GoU counterpart: MoWE/FSSD | Strengthening the policy and planning framework at the national level and in N. Uganda; improving skills and knowledge in forestry administration and Sustainable Forest Management (SFM); improving mechanisms for quality assurance, monitoring and evaluation of forestry programs; promoting synergy and complementarities through partnership. | \$491,000 2010-2012 |
| | NFP Facility for Forestry GoU counterpart: MoWE/FSSD & Environmental Alert | Support to achieving sustainable forest management and reduced rates of deforestation and forest degradation | \$200,000 |
| | Trans-boundary Agro-ecosystem Management Programme for the Kagera River Basin (Kagera TAMP) GoU counterpart: MAAIF, MWE, NEMA | Support the adoption of an integrated ecosystems approach for the management of land resources in the Kagera Basin | \$7 million for 3 countries 2009 – 2014 |
| JICA | Technical Assistance to Meteorology sector (proposed) GoU counterpart: MoWE/Department of Meteorology | Strengthen the meteorological services in Uganda | Funding: n/a |
| | Technical cooperation project to strengthen the capacity for wetlands management GoU counterpart: MoWE/Wetlands Management Department | Conduct a comprehensive national wetlands inventory survey and assessments; formulate comprehensive management plans for vital & valuable wetlands | Funding: estimated at \$9.9 million |
| Netherlands | Promotion of Renewable Energy and Energy Efficiency Programme (PREEEP) | In partnership with GTZ, support for implementation of the (PREEEP) | 4 million Euros |
| | The African Biogas Partnership Programme | Support for a public private partnership with two development NGOs, Humanist Institute for Co-operation with Developing Countries (HIVOS) and SNV-Netherlands Development Organization (SNV), to implement a National Biogas Program in Uganda. The program aims to support the construction of over 10,000 domestic biogas installations in Uganda by 31 December 2013. | 4, 185, 133 Euros 4 years to 2013 |

| Donor | Project Name | Activities Supported | Years/Funding |
|-------|--|---|---|
| | Financing of Bujagali | | \$73 million |
| | Support to the Protected Area Authorities (of the three countries of DR Congo, Rwanda and Uganda) | Support to implement trans-boundary collaboration in conservation and revenue sharing in the Virunga-Bwindi ecosystems. A secretariat has been established and is based in Kigali; it assists in developing a ten year Trans-boundary Strategic Plan with a five year implementation action plan. One of the key objectives of the programme is to facilitate revenue sharing with local communities staying in the proximity of these parks. A tripartite treaty is under Development. | |
| UNDP | Project: Conservation of biodiversity in Albertine Rift forests Counterpart: WWF/MoWE | Innovative biodiversity conservation activities in the Northern Albertine Forests; national Conservation Strategy for Albertine Rift Forests; coherent M&E strategy for closed forests in Uganda | 2008-2013: \$3.4 million out of total project budget \$11.3 million |
| | Extending Protected Areas Through Community Based Initiatives Counterpart: IUCN/ MoWE Wetlands Department | Strengthen Uganda's National PA network by expanding coverage of the network to include the country's biologically important wetland ecosystems. | 2009-2013 \$0.8 million out of \$1.0 million |
| | Strategic Approach to International Chemicals Management Counterpart: NEMA | Prepare guidelines and a methodology for the integration of sound management of chemicals in national development strategies | 2009-2010 \$250,000 out of \$450,000 |
| | Mainstreaming SLM activities in 6 cattle corridor districts | Mainstream sustainable land management activities in district development plans and local developments as well as support implementation of identified SLM priorities Counterpart: MAAIF | 2010-2012 \$1.6 million |
| WFP | Joint Programme on Climate Change for Uganda | National capacity for climate change adaptation and mitigation strengthened in the areas of policy and planning, advocacy, research, lessons learned and finance; district capacity for climate change adaptation and mitigation strengthened through training, advocacy and complementary inputs; community capacity for climate change adaptation and mitigation strengthened through training, advocacy and complementary activities. | \$35.7 million over 5 years |
| | Karamoja Productive Assets Programme | Improved vegetation cover by reforestation and reduction in fuel wood consumption; increase community capacity to conserve soil and water resources through integrated water harvesting | \$8 million over 4 years |
| | United Nations Trust Fund for Human Security | Land at selected de-gazetted IDP camps and areas of return restored and sustainably managed; annual per capita increase in marketable surplus of staple foods (maize, beans) sold through farmer association members; alternative sources of income of 2,000 farmer households increased through community based integrated fish farming; physical asset (community roads) that connect target population to basic services are opened and serviceable. | \$1.3 million -2 years |

| Donor | Project Name | Activities Supported | Years/Funding |
|-------|--|---|--------------------------|
| | Belgian Survival Fund | Community action plans and early warning systems developed in 3 districts; Capacity of district staff builds on data collection and utilization of EWS | \$776,000- 3 years |
| | CROWNS-Tree planting | Target of 1000 trees planted per acre over 80 acres (one acre per CROWNS school); training and monitoring carried out by District Forestry Office; CBOs given food for work for raising seedlings for schools | \$5 million over 3 years |
| | Installation of Automatic Weather Stations | Installation of weather stations and related training in Karamoja and Teso regions | app \$400, 000 |

The **U.S. Fish & Wildlife Service (FWS)** and the **U.S. Forest Service (USFS)** are the two other USG donors that have been active in biodiversity conservation in Uganda. FWS has recently (2009 to present) supported through their Wildlife Without Borders program:

Capacity Building for Reduced Bushmeat Exploitation in Eastern Africa in partnership with the Wildlife Conservation Society. The purpose of this project is to strengthen capacity to reduce bushmeat off-take in and around key protected areas in eastern Africa through the building of the newly established Bushmeat-free Eastern Africa Network (BEAN). BEAN is a network of organizations and individuals working collaboratively to mobilize resources, share information, set priorities, and apply bushmeat solutions.

FWS Funding: \$190,014.68 Leveraged Funds: \$90,031.82

Capacity Building for Cultural Leaders to Address the Bushmeat Trade in Murchison Falls Conservation Area, Uganda in partnership with UWA.

FWS Funding: \$13,070 Leveraged Funds: \$5,000

Eastern Africa Law Enforcement Capacity Building Project in partnership with UWA, to strengthen the enforcement of wildlife laws in the eastern Africa region by building the capacity of law enforcement stakeholders in the Murchison Falls Conservation Area.

FWS Funding: \$19,900 Leveraged Funds: \$7,500

On a bi-annual basis, FWS provides grant funding through their Great Ape Conservation Fund.

Recent grants of which Uganda has been a beneficiary include: Strengthening trans-boundary collaborative processes in the Virunga Massif-Bwindi forest ecosystem (partner: IGCP; USFWS grant amount: \$96,610; leveraged funds: \$205,440); and The Great Apes Conservation Education

Initiative for Uganda (partner: Wildlife Clubs of Uganda USFWS grant amount: \$52,019; leveraged funds: \$12,329).

USFS has supported several initiatives in the Congo Basin, and currently is conducting a mission to Uganda to identify possible activities, partners, and geographical areas for support.

Donor-funded Project Success Stories:

Uganda's Samlog Production Grant Scheme (SPGS): Gives grants to individuals who are interested in and can invest in establishing tree plantations especially for timber production. It is a joint EU and GOU project that started in 2004. After four years, 10,000 hectares have been established by private growers; under

phase 2 (2009-2013, to be funded by the Norwegian government), 30-40,000 hectares will be established. Of the 10,000 hectares, 79% was planted on public (CFR) land, 21% on private land. The main beneficiaries are small and medium size entrepreneurs. The project attracts private sector investment into commercial tree planting. The scheme gives conditional grants. Support is only for private sector individuals, associations, and/or companies; contracts are for a minimum 25 hectares and maximum 500 hectares; the land for planting can be privately owned or CFR land leased from NFA; a contract must be signed and include an approved FMP; it only supports trees grown primarily for timber and/or poles; no grant funds are paid upfront; technical support is given free. The scheme facilitated the formation of an independent growers' organization, the Uganda Timber Growers Association. The existence of UGTA builds sustainability into the scheme. The SPGS has initiated a steering group, COMFORT (Commercial Forestry Research and Training), and through COMFORT, the private sector has set out priorities for research projects (one on pests and diseases and one on tree growth, both funded by SPGS). This project is considered a success because it has kick-started the development of many areas essential to support the commercial forestry sector (commercial forestry research, training, and larger nurseries); sustainability has been strengthened through UGTA; independent research has been prioritized by COMFORT and supported; thousands of rural jobs in forestry and support services have been created. These aspects have laid a foundation for sustainable, commercial forestry in Uganda. Previously, tree planting on a commercial scale was considered the State's business – now it is considered a private sector enterprise. One of the aims of this project is to relieve pressure on natural forests; however, no quantitative information was available on this.

Protected Area Management and Sustainable Use (PAMSU) Project: This project was implemented in two phases. The first phase focused on capacity building between 1999 and 2002, the second phase involved implementation of programs within UWA, Uganda Wildlife Education Center (UWEC), and the Ministry of Tourism Trade and Industry for the Wildlife, Tourism and Antiquities Departments.

Under the first phase, capacity building for UWA was successfully accomplished. Capacity was built for planning in partnership with USAID, resulting in the preparation of the first UWA Strategic Plan and several General Management Plans (by 2010 all PAs had General Management Plans); and in policy formulation, which resulted in preparation of operating policies for financial management, human resources, partnerships for biodiversity conservation, collaborative management of wildlife with communities, wildlife translocations, and re-introductions. The capacity to develop/prepare plans and policies was built in house with relevant departments either created or existing ones taking the lead. By 2002 at the end of the capacity building phase several UWA staff had undergone relevant training in the different skills required to prepare, review, and implement plans and policies. Most of the staff were retained within the organization and those who moved out went on to beef up capacity in sister agencies like NFA and other conservation NGOs in the country and the region. Even after a major staff shake up in 2010, UWA remained relatively stable because for every key position there were three layers of competent staff – this could largely be attributed to PAMSU's support.

Under the second phase, from 2002 to 2007 (extended to 2010), the focus was on program implementation based on the Strategic Plan and General Management Plans prepared in-house. With internal capacity built, there was no more need for external technical support in program implementation, and indeed the project coordination unit (PAMSU) was eventually integrated with UWA management and all funds directly disbursed to UWA. The key results over the project period were:

- Increase in key wildlife populations by 5% – achieved
- Reduction in poaching by 80% – achieved
- Financing of up to 80% operations budget from own revenue – achieved

- Two collaborative management agreements for wildlife outside PAs – achieved
- PA infrastructure development – UWA office built, 50% of PA offices and staff accommodation built
- PA boundaries surveyed and marked – 80% achieved
- US \$1million set-aside to start trust fund – US \$5m were set aside (exceeded the goal)
- Equipment for PA management in place – achieved including a maintenance and replacement plan, by 2010 UWA could replace vehicles from own funds.
- Increase capacity for business management (concessions) – 70% achieved (concessions revised and renegotiated, new standard concession agreement designed and implemented)
- Governance and public image enhanced – this was fully achieved until the collapse in 2010

The PAMSU support helped UWA to function as a unit because it was channeled directly into the agency and capacity to manage funds and programs was built and retained. UWA implemented all the components of project support. As a result other donor agencies found it prudent to work directly with UWA based on the UWA revised Strategic Plan 2007-2012; these included the EU, GTZ, Face Foundation, Flora and Fauna International, MacArthur Foundation, and International Fund for Animal Welfare. A key lesson out of the PAMSU project is that an agency can be better strengthened by directly working with it and not through third parties or intermediary organizations.

Table K-2: History of USAID Engagement in Biodiversity Conservation in Uganda

| Project/LOP/\$/IP/Geog scope | Local institutions supported | Components/Program Areas | Brief Summary of Results/Effectiveness |
|--|--|---|--|
| Biodiversity & NR grants provided from USAID/W Prior to 1991 > 25 NGOs & GOU institutions & universities National scope | UNP, FD, MBIFCT, ITFC, Rwenzori Mountaineering Services; IGCP (regional); National Biodiversity Databank; MUIENR | Examples of grants: WWF-Bwindi & Mgahinga FRs; later WWF sub-contracted with CARE and this became the DTC project; Rwenzori Mts. Conservation & Dev Proj (WWF); Kibale Forest Con & Dev Proj (WCS; in 1992, WCS/Kibale received a 5-yr USAID grant and developed MUBFS); MUIENR/National Biodiversity Databank (facilitated biodiversity studies in SW PAs); IGCP-AWF support to gorilla parks. | Many of these projects highlight strengths and weaknesses in using development activities to attain conservation objectives. CARE DTC Project remained in place until early 2000; many of the other IPs have continued to work in conservation and/or the nexus of con-dev. DTC was a leader in promoting sustainable utilization within a PA through special use zones. |
| Action Program for the Environment Part I (1991-2000 \$40 million LOP Chemonics (APE I) & ARD (APE II) National & SW | Department of the Environment, the National Environmental Information Center, UNP, FD, Tourism Department, Makerere University | Grants for field level conservation (later through GMU); support to the NEAP process; non-project assistance (NPA)- CARE-DTC, AWF, IGCP, WWF. | National Environmental Action Plan resulted in formation of NEMA and Uganda's environmental policy; PAMP for QEPA; strengthened and consolidated support for the gorilla parks, including institutional capacity building. Many initiatives supported in eco-tourism/community-based tourism (UCOTA) around the gorilla parks and in other parts of Uganda remain today. |
| Conserve Biodiversity for Sustainable Development (COBS) | Districts (DEAPs), UWA (PA management | Mgmt of biodiversity in PAs; environmental planning and mgmt in bio-diverse landscapes and districts; capacity building and institutional | PAMPs for MFCA, Lk Mburo, Bwindi, Mgahinga; DEAPs in Rukungiri, Kisoro, Kanungu, and Bushenyi and pilot projects funded in |

| | | | |
|--|---|---|---|
| <p>ARD Sept 1999-Sept 2002 National & SW (PAs and adjacent admin districts) First USAID project to use landscape approach</p> | <p>planning), NEMA (EIA capacity)</p> | <p>support-EA & environmental review; special biodiversity support activities EPED-Masindi District subsumed under COBS?</p> | <p>12 sub-counties; developed a system for Annual Operations Plans for UWA; implementation of QEPA PAMP year 1 operation plan; 80 individuals from GOU, local govt, and partners trained in EIA; certification developed for EIA practitioners; transformed GMU to ECOTRUST. Implementation of DEAPs beyond COBS support, and success of implementation of PAMPs-GMPs (following QEPA yr 1 operations plan, additional activities from the GMP have been included in and funded by UWA's budget)</p> |
| <p>PRIME West DAI w/ECIAfrica, MSI, Innovative Resources Management and Training Resources Group Oct 2003 (design) March 2004-July 2008 Landscape-CBNRM-competitive-ness approaches A-R landscape National level-enabling envirnmt</p> | <p>Makerere, Nature Uganda, AWF, ECOTRUST, UWA, NFA (international NGOs: JGI, WCS, AWF)</p> | <p>Goal: to increase economic opportunities for rural households and communities in SW/W. Overall development hypothesis: by increasing income and employment through agriculture- and NR-based enterprises, improved land stewardship would result and threats to the region's biodiversity assets and environmental degradation would decrease.* PRIME built on the ICD project framework; rather than only involving communities in NR decision making and management, it sought to raise incomes from NR-based enterprises, improved NR management, sustainable agriculture, and enterprise development.</p> | <p>Mixed signals from USAID/Washington and the mission resulted in program revisions two times over the LOP, making it difficult to focus on conservation results. However, PRIME/W still had significant results, among them: reintroduced 3 large mammal species that had become locally extinct to Kabwo Reserve (Jackson's Hartebeest, Defassa Waterbuck and Giant Forest Hog); established a tourism activity for the ethnic minority Batwa group in the MGNP; established a community-owned enterprise south of BINP to co-manage with a private sector partner a high end eco-lodge to cater to gorilla tourism; assisted NFA to engage with communities around their major FRs in four districts resulting in the signing of 10 CFM agreements; human-wildlife conflicts (trenches & fishing villages around QEPA); applied landscape approach & GIS to map wildlife corridors.</p> |
| <p>Wildlife, Landscapes, Development for Conservation (WILD) WCS \$6.5 million August 2007 – June 2011 North & A-R</p> | <p>UWA, NFA, NEMA, Gulu University, Wildlife Clubs of Uganda, Tree Talk</p> | <p>Reduce threats to biodiversity and conserve critical ecosystems across diverse landscapes in northern Uganda; and address threats of petroleum related developments to biodiversity. Intervention areas: Biodiversity Management; Environmental Education and Communication; Property Rights and Resource Governance; Improved Livelihoods; NRM</p> | <p>TBD</p> |
| <p>Sustainable Tourism in the Albertine Rift (STAR) AED with Solimar International March 2010- GSTA Cooperative</p> | <p>IPs (local and international): GWU, IGCP-AWF, USFS, JGI, FFI, UCOTA, NU, WCS, UWA, MTI, WCU,</p> | <p>TA & training to strengthen enterprises and ensure functional businesses; strengthen ability of national and regional institutions to support tourism and conservation in the Albertine Rift and the communities that provide tourism experiences to ensure that efforts and relationships between</p> | <p>TBD</p> |

| | | | |
|------------------|--------------------------------------|--|--|
| Agreement A-R | UTA, AUTO, ECOTRUST, UHOA, TAG | tourism stakeholders continue beyond the life of the USAID-STAR program; link local enterprises with nearby lodges; encourage lodges and tour operators to support community enterprises; and improve media coverage about sustainable tourism issues. | |
|------------------|--------------------------------------|--|--|

*Re PRIME/West: In February 2005, the program goal was revised to meet biodiversity earmark requirements: to conserve biodiversity by reducing threats to forest, woodland and aquatic ecosystems through increased economic opportunities and conflict resolution for rural communities in selected regions of southwestern and western Uganda. The program sought to conserve critical habitat and species in a landscape context, within the two landscapes, Greater Virunga and the Murchison/Toro/Semliki that occur in south-western Uganda. The revised PRIME/West SOW had two key Project Intermediate Results:

- PIR1: Enabling environment for biodiversity conservation and improved livelihoods strengthened
- PIR 2: Threats to forest, woodland and aquatic ecosystem (lakes and wetlands) biodiversity decreased

Later, in 2007, based on a new USAID/Uganda strategic framework and new indicators, five final indicators under Environment were included as part of PRIME/West's PMP

- Number of hectares under improved natural resource management as a result of USG assistance
- Number of hectares in areas of biological significance under improved management as a result of USG assistance
- Number of policies, laws, agreements or regulations promoting sustainable natural resource management and conservation that are implemented as a result of USG assistance
- Number of people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance
- Number of people receiving USG supported training in natural resources management and/or biodiversity conservation

To accomplish the remaining tasks toward the achievement of the overall PRIME/West results based on the revised SOW, PRIME/West operated as a Kampala-based Grants Management and Policy Unit with a small set of core personnel whose overall functions were to:

- Manage the SAF, its subcontracts and grantees
- Support UWA, NFA, the NEMA, and the Wetlands Inspection Division (WID)
- Support UWA and NFA in their efforts to strengthen the policy and legal framework for sustainable conservation of biodiversity
- Ensure environmental compliance for all partner activities
- Ensure partners implement cross-cutting activities as planned

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