



**PUBLIC-PRIVATE SECTOR FINANCING MECHANISMS TO
SUPPORT SUSTAINABLE MANAGEMENT OF FOREST CORRIDORS
IN THE MURCHISON -SEMLIKI LANDSCAPE**

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Executive Summary

This feasibility study was commissioned by WWF as part of the UNDP-GEF funded project ‘conservation of biodiversity in the Albertine rift forests of Uganda’, under the sub-grant to WCS. The objective of the study was to identify possible sustainable financing mechanisms for the conservation of wildlife corridors in the northern Albertine rift or Murchison-Semliki Landscape. Specifically, to identify opportunities for both the public and private sector to raise funds needed for the management of the forest corridors. This report identified potential sources of funding from public-private sector companies toward the management and conservation of corridors in the Murchison-Semliki Landscape. The study approach involved holding discussions with key public utilities and private sector companies operating in the Murchison-Semliki Landscape, which benefit directly or indirectly from the conservation of forests. Additionally, policy documents and reports from public agencies, private sector companies and relevant scholarly publications related to conservation financing were reviewed. This study report is intended as a contribution to the strategic planning process for the Murchison-Semliki Landscape.

In summary, current levels of financing for sustainable conservation programs are inadequate. Unfortunately, the drivers of forest loss such as human settlement, agriculture, and fuelwood extraction are on the increase. Worldwide, a growing number of governments have recognized the economic and environmental benefits of reducing development impacts on ecosystems. As such, national governments have focused on undertaking policy reforms and launch finance mechanisms to address barriers affecting investment in the forest sector and wildlife conservation in particular. Public-private sector partnership is necessary to catalyze sustainable financing mechanisms for conservation. The following were identified as feasible mechanisms for public – private sector companies to finance forest corridors conservation in Murchison – Semliki Landscape broadly categorized as direct, indirect financing options, and conservation strategies.

Direct financing mechanisms identified include:

- 1) **Payment for Ecosystem Services (PES) – Private Sector:** Key sources of finances include the forest carbon finance generated through tree planting projects and REDD initiatives. The net carbon benefits are projected to be 15 million tonnes of carbon dioxide (M tCO₂) on average per year for the first 14 years and 31 M tCO₂e on average per year thereafter. Net revenues from avoided deforestation are projected to reach 78 million United States Dollars (with a sale price of 5 USD/tCO₂e) on average per year for the first 14 years and a maximum of 153, million USD over the rest of the project life time. The carbon marketing model is assumed to be a forward sale of issues credits at a lower carbon price to secure upfront payments, with a higher carbon price after validation and verification. Opportunities for REDD + to work include the highly motivated private forest owners with relatively well stocked tropical forests, willingness to pay for transaction costs (estimated at USD220,000), government’s commitment to the REDD process demonstrated by a National REDD + Preparedness Paper in place, and the Kyoto Protocol’s Clean Development Mechanisms, at least by 2012. Private companies such as Kinyara Sugar Limited, and BATU are also interested in reducing their carbon footprint (**Carbon offset**) by planting trees, investing in renewable energy production (e.g. bagasse) and development of energy-efficient technologies.
- 2) **Payment for water and watershed services – Private sector:** Payment for water and watershed services from rivers Wambabya, Nkusi, and Waki by downstream users such as Hydromax Limited, tea companies, and Oil and Gas exploration companies is a potential source of finances for the protection of riverine corridor areas. Directorate of Water Resources Management has established four Water Management Zones in Uganda designated by catchment areas, a framework that could help raise public-private sector support, and financing for the management of subwatersheds in the Albert catchment area. Under this financing mechanism, the public sector could also help raise money from statutory license and permit fees and levies on water for retail consumers toward watershed protection.

- 3) **Compensation and Biodiversity offset scheme** – Oil and Gas companies, specifically Tullow Oil is potentially willing to finance corridor conservation activities in the Murchison–Semliki Landscape to offset its environmental impacts resulting from their drilling activities inside Kabwoya Wildlife Reserve, and Murchison Falls National Park. Banks can also be encouraged to adopt the biodiversity offset mechanism as a lending standard for good business practice to reduce the environmental impacts resulting from the activities of their clients. Opportunities for this mechanism to work include the environmental Sensitivity Atlas for the Albertine Graben, the National Environment Act of 1995 that required developers to conduct an Environment Impact Assessment (EIA) and mitigate risks to the environment and humans. In the case of financial institutions, the social and environmental risk assessment can be further strengthened, if banks agree to adopt the Equator Principles, and receive more training from conservationists knowledgeable in environmental risk tracking.
- 4) **Tourism-based revenues** – Public sector: Tourism user fees from Murchison Falls National Park, Kabwoya and Semliki Wildlife Reserves and Budongo Forest Reserve are a potential source of finance mainly from the Revenue Sharing scheme managed by Uganda Wildlife Authority. Private sector companies such as Kinyara Sugar Limited, McLeod Russel Uganda Limited with investment interests in tourism, including hotels, can help to generate finances to support conservation. The availability of a National Travel and Tourism Competitiveness Plan for Uganda developed with support from USAID, and the availability of biological data from WCS/JGI, and the National Biological Databank at Makerere University Institute of Environment and Natural Resources present an opportunity to identify potential sites for bird viewing, nature walks in Bugoma Forest Reserve, and establishment of coffee and craft shops along Mubende – Fort Portal road and the Fort Portal-Hoima road for tourists.
- 5) **Corporate Social Responsibility** – Private sector: Corporate Social Responsibility (CSR) is one of the strategies that private business companies use to address the environmental and distributional conflicts associated with their businesses. Private companies consulted are willing to finance tree planting, and restoration programs in the landscape.
- 6) **Conventional donor funding** from multilateral donors such as UNDP-GEF, and World Bank can support the establishment of REDD+ initiatives, particularly support the process of developing the REDD Project Design Document (PDD), while bilateral donors such as USAID's Global Development Alliance (GDA) support private companies to develop eco-agriculture projects under Feed the Future program to mitigate food insecurity and create habitats for biodiversity, development of biogas technology for tobacco, tea and sugarcane farmers, climate adaptation programs, and NORAD could finance tree planting, and restoration projects, including commercial forest plantations under the Sawlog Production Grant Scheme (SPGS).
- 7) **Domestic budget allocations** – Public Sector financing: Government revenues collected in the form of taxes, license and permit fees is a potential source of revenue to finance the management of forests in the landscape. Government revenues can be earmarked for implementation of conservation programs in the landscape. The opportunities for this financing mechanism to be realized are the National Development Plan (2010/11-2014/15), which recognizes the economic contribution of the forestry sector, and tourism industry to national development. The government of Uganda is required to work towards achieving environmental sustainability – goal No.7 of the Millennium Development Goals (MDGs), and biodiversity forms the foundation of the vast array of ecosystem services that support human-well being. Also, Uganda is a signatory to various international environmental conventions, particularly the Convention on Biological Diversity (CBD).
- 8) **Capture of economic rent** - private sector: Payment of resource user fee, surcharges, and fines from extractive industries (e.g. timber, minerals, and oil and Gas companies) are a potential source of revenue to finance corridor conservation. The other mechanism is the **polluter pays principle application** targeting mainly agricultural companies (tea, tobacco, Sugar, and agro-processing), Oil and Gas, and automobile garages. Revenue collected from pollution permits and fines collected for violation of pollution standards can be earmarked for financing ecosystem restoration interventions.

Indirect financing mechanisms include the development of economic incentives for private landowners to plant trees, and forest owners to keep their land under forests. The economic incentives could be in form of subsidies or conservation easements such as free access to technical knowledge in forest business planning and management. Other conservation strategies include promotion of **Soil and water conservation, and agroforestry practices** by private agricultural companies focusing on communities where they work, promotion of **forest-related enterprises** (e.g. bee keeping, and fruit growing, aquaculture) by private companies, and development of project-level alliances by private companies to supplement donor-funded programmes. For example, protected area management plans for national parks and wildlife reserves, and the National Forest Plan are currently being reviewed to make them consistent with the national development objectives. The review process provides an opportunity for conservation organizations to highlight the importance of corridors in wildlife conservation.

Conservation mechanisms: Private sector: Set up a **conservation trust fund** to help raise finance for biodiversity conservation. This strategy will be very critical to the option of purchasing land in the corridor areas. Biogas technology development is another strategy that can help reduce forest loss by providing biogas plants to tobacco, and tea farmers. Lastly, biogas technology adoption, and population control will be very critical interventions to reduce the consumption of forest resources.

Recommendations

In order to ensure that the identified sustainable financing mechanisms are efficiently captured and planned for, the following recommendations are made.

- 1) Conduct meetings with special interest groups such as BATU, and Tea companies. This should be followed by a general workshop for all decision makers in potential financing from organizations to get them thinking about the opportunities to participate, and contribute to forest corridor conservation. The Albertine Rift Forest Carbon Group, an informal network for conservation organizations working in the region provides a great opportunity to mobilize, coordinate and implement the sensitization activities;
- 2) Hold talks with representatives of donor agencies (e.g. UNDP-GEF, USAID, NORAD, World Bank) to highlight the importance of Murchison – Semliki landscape forest corridors, and the need for funding. Proposed activities for funding could include development of the Project Design Document (PDD) for a REDD project, alternative livelihood projects (e.g. bee keeping, ecotourism), sustainable agriculture focusing on shaded coffee and cocoa, biogas development, and support the development of business plans for protected areas;
- 3) Prioritize the corridors and associated management actions based on objective criteria such as cost and availability of funds, species, ecosystem services, and institutional capacity. In addition, develop corridor strategic action plans. Inventory all players relevant to each corridor, their on-going activities, and identify interventions that may require new players or joint implementation.
- 4) Work with private land, and forest owners associations to implement land registration and titling, tree planting and agro-forestry programs;
- 5) Work with “set-to-go” companies such as banks, and agricultural companies with committed funds to undertake tree planting, restoration, and enterprise development;
- 6) Private companies should be encouraged to establish corporate awards and endorsements as a complementary strategy to CSR. These grants can be extended to community based organizations, forest owners associations, and vulnerable groups to stimulate and support activities that drive ecosystem improvement, nature conservation and sustainable use of natural resources.

1.0 Background to the study

Wildlife Conservation Society (WCS) with funding from UNDP-GEF/WWF conducted the initial study to assess sustainable financing options to support conservation of the northern forest corridors of the Albertine Rift. In this study, Akwetaireho *et al.* (2009) identified a number of financing options namely forest carbon finance, payment for ecosystems services, biodiversity offsets, tourism use fees, agro-forestry, and biochar production. In the report, they recommended that another study be carried out to identify the willingness for public-private sector companies to support the management of the Murchison-Semliki Landscape corridors. This report is the main product of the scope of work described in the **Appendix 1**, which was drawn up after that study.

1.1 Introduction

World Wide Fund for Nature (WWF) Uganda is working in the Murchison-Semliki Landscape with a UNDP/GEF grant to strengthen the protection of the Albertine rift forests, 'the Albertine rift forests conservation project in Uganda' focusing on the Murchison-Semliki Landscape. WCS was subcontracted to implement a component of this project. The northern forests section of the Murchison-Semliki Landscape extends from Budongo Forest Reserve (FR) to forests in the Toro-Semliki Wildlife Reserve at the foot of Rwenzori Mountains National Park through Bujawe, Wambabya, Bugoma, Kasato, Nyakarongo, Kagombe, Kitechura, Nkera, Ihambaro, Matiri and Itwara Forest Reserves in Masindi, Bulisa, Hoima, Kibaale and Kyenjojo districts. The UNDP-GEF Albertine Rift Project is designed to support conservation of forest reserves and forest on private land in the northern Albertine Rift region of Uganda. Wildlife Conservation Society's (WCS) sub-contract activities focused on the identification of critical corridors in the landscape, assessment of their biodiversity value and identify mechanisms to finance their conservation. The project outputs for Wildlife conservation Society are:

- 1) Sustainable financing mechanisms identified and promoted;
- 2) Monitoring and Evaluation frameworks for the Albertine rift protected area system developed;
- 3) Biodiversity and forest resources in the Central Forest Reserves (CFR) inventoried;
- 4) Northern biodiversity corridor assessed;

This consultancy focused on sub-contract output one, that is, identification and development of Sustainable Financing Mechanisms. Given the pressure on forest resources, there is need to identify and generate long-term financing to fund management activities in the forest landscape of the northern Albertine Rift. The district local governments which are supposed to implement environment and forest conservation activities are inadequately funded to do so, hence the need to source external financing. It is hypothesized that development and strengthening of existing economic and social incentives to make forest conservation profitable to the landowners can help reduce forest degradation and loss. Public- and-private sector companies that depend heavily on forest and watershed resources are willing to contribute to the management and conservation of those resources. The challenge, however, is to find the appropriate mechanisms to generate the financial resources needed to support forest conservation, and develop a delivery mechanism for incentives payments.

This report documents most of the innovative ways through which finance can be raised to support the management of forests in the Murchison-Semliki Landscape. It also identifies opportunities for harnessing those financing mechanisms and presents issues that need to be addressed for effective results.

1.2 Objectives and Approach

The objective of the feasibility study was to gather data and provide inputs relevant for the identification of potential financing mechanisms for the protection of forest corridors in the northern Albertine Rift, and recommend the most feasible financing mechanisms for implementation. The study approach involved an objective identification of public agencies and private sector companies working in the Murchison-Semliki Landscape. A comprehensive list of public agencies and private sector companies to be surveyed was generated in consultations with the Albertine Rift Forestry Carbon Group (ARFCG). Meetings with private sector companies, public utility agencies operating in western Uganda, and the local government representatives for Masindi, Hoima, Kibaale, and Kyenjonjo districts were held. A five-day field visit to the corridor areas to consult with companies whose offices are based in the focal landscape was done. During consultations, the following company issues were covered: dependence and impact on forest/wetland resources, existing and proposed conservation policies/plans, constraints to successful implementation conservation plans (e.g. political, legal and social), company's willingness to support forest conservation based on current programs, and future opportunities for investment in forest conservation were discussed and documented. A desk-top review of government, conservation organization reports, and a literature search on sustainable financing options for conservation was also conducted. This work was conducted between November 2010 and February 2011. The information and knowledge acquired was then synthesized to form this report.

1.3 Forest loss in Uganda

Between 1990 and 2005, Uganda lost about 26 per cent of its remaining forest cover (about 1.3 million hectares per year), and deforestation continues today at a rate of 2.2 per cent per year (NFA 2009). Importantly, the total forest loss of 115,521 hectares (i.e. 515ha in local forest reserves, and 115,006ha in the central forest reserves) was recorded during the same period (NFA 2009). Most of this loss was due to encroachment on central forest reserves for subsistence farming (60,000 ha), commercial farming (1775 ha), and human settlement (763 ha). Similarly, local forest reserves declined by 691 ha due to subsistence farming and human settlement (107ha). Overexploitation of forest resources to meet the ever-increasing demands for fuelwood, construction materials (e.g. timber and building poles), and the demand for human settlement and agricultural land are some of the major challenges to forest managers in Uganda. The available arable land suitable for agriculture cannot support Uganda's population, with an annual growth rate of 3.2 % (UBOS, 2010). In 1998, the per capita consumption of firewood in Masindi was 0.7m³ and 0.6m³ in Hoima district (Banana and Turiho-habwe 1998). According to the National Forestry Authority (2003), approximately 25 million tonnes of wood is consumed annually in Uganda, which is equivalent to 1.1 tonnes per capita per year. Most of this wood (65%) is used as household firewood, charcoal (16%), and commercial and industrial firewood (14%) (Winterbottom and Eilu 2006). Harvesting of timber in central forest reserves and on private forests is relatively high. Unfortunately, the recovery rate of converting logs into timber for mill sawn logs is 30 percent and only (25%) for pitsawn timber (Odokonyero 2005). In the same study, the recovery for charcoal production was reported to be very low (20-25%). This implies that more trees are cut down to meet the demand.

1.3.1 Forest loss in Murchison – Semliki landscape

The Murchison-Semliki land cover map for the period 2000-2005 produced by WCS in 2006 showed that the entire landscape had a total area of 1,892 km² under Central Forest Reserves (CFR) and 1,435 km² of forest outside protected areas (WCS 2008; Nangendo et al. 2010). Between 2000 and 2006, three hundred square kilometers (300 km²) of forest was lost in this region, mostly outside the protected forest system. According to WCS (2008), nearly 40 percent of this loss was due to commercial crops farming alone. More

recent land cover mapping for the same landscape by WCS based on 2010 satellite images showed that an additional 484 km² of forest has been lost.

1.3.2 Drivers of forest loss in Murchison – Semliki landscape

In May 2008, WCS conducted a socioeconomic survey to understand the drivers of forest loss in Murchison Falls – Semliki landscape. The socioeconomic survey was designed to groundtruth the forest cover change map. As such, the parishes selected for the household survey were chosen based on the areas of uncertain classification that were identified during the forest cover classification exercise (**Table 1**). A total of 502 households were randomly selected from fifteen parishes and interviewed. Households were asked whether or not they had opened up forested land over the past six years (2000-2006) and to give reasons or purpose for opening up the forested land. In order to counter any memory recall problems, households were also asked about opening up forested land in the past one year (i.e. Jan 2006-Dec 2007). Evidence of recent forest clearing in the surveyed parishes were also observed and noted. Four major drivers of forest loss, that is, human settlement, subsistence crops farming, commercial crops farming, and livestock grazing were identified. The household responses to drivers of forest loss were then analysed in Microsoft Excel to generate the percentage contribution of each driver at the parish level, and spatially explicit maps were produced in ArcGIS ver 9.2 (**Figure 1**). On all maps, parishes surveyed are represented by the parish numbers as provided in **Table 1**. Some of the parishes were combined due to recent adjustments in the administrative boundaries.

Table 1 Parishes that were surveyed in 2008 and their geographical coordinates

Parish_No	PARISH	District	X_COORD (EW)	Y_COORD (NS)
1	Labongo	Masindi	354688	197000
2	Kibwona	Masindi	348140	186836
3	Nyabyeya	Masindi	338246	186527
4	Nyantonzzi	Masindi	328458	180876
5	Kasenene_Kajongo	Masindi	318982	180373
6	Kidoma	Hoima	292599	154032
7	Igwanjura	Hoima	281016	130013
8	Kyangwali	Hoima	256382	133350
9	Kihuura	Kibaale	270590	112766
10	Kabamba	Kibaale	280499	109487
11	Rubango_Haikona	Kyenjonjo	242061	89193
12	Mirambi	Kyenjonjo	229066	90096
13	Rwibaale_Kyankaramata	Kyenjonjo	256503	64370
14	Rwibaale II	Kyenjonjo	262089	62104
15	Kigunda	Kyenjonjo	250798	52941

Note: coordinates presented here indicate a central location within the parish for pie chart display on the map.

In all parishes surveyed, households reported clearing forested land for settlement over the period 2000-2006 (**Figure 1**). Over 50 percent of the households in six parishes reported clearing forested land for settlement. In the remaining parishes, less than 50 percent of the households reported opening up land for settlement. The highest percentage (75%) of households who reported clearing forested land for settlement was recorded in Rwibaale II parish in Kyenjonjo district followed by Labongo parish (69%), Igwanjura parish

(60%), and Mirambi parish (Kyenjonjo) had the least (23%). In eight of the parishes surveyed, over 50 percent of the households interviewed reported clearing forested land for subsistence crops farming. The highest percentage (71%) of households that reported clearing forested land for agriculture occurred in Mirambi and Rubango_Haikona parishes. Forest loss to livestock grazing was only reported in four and three parishes respectively. In those parishes where commercial crops agriculture was reported as a key driver of forest loss, Rwibaale_Kyankaramata recorded the highest loss (9%) followed by Rwibaale II (5%) and Kibwona_Budongo. In only three parishes of Igwanjura, Nyabyeya, and Mirambi was livestock grazing reported as one the key drivers of forest loss.

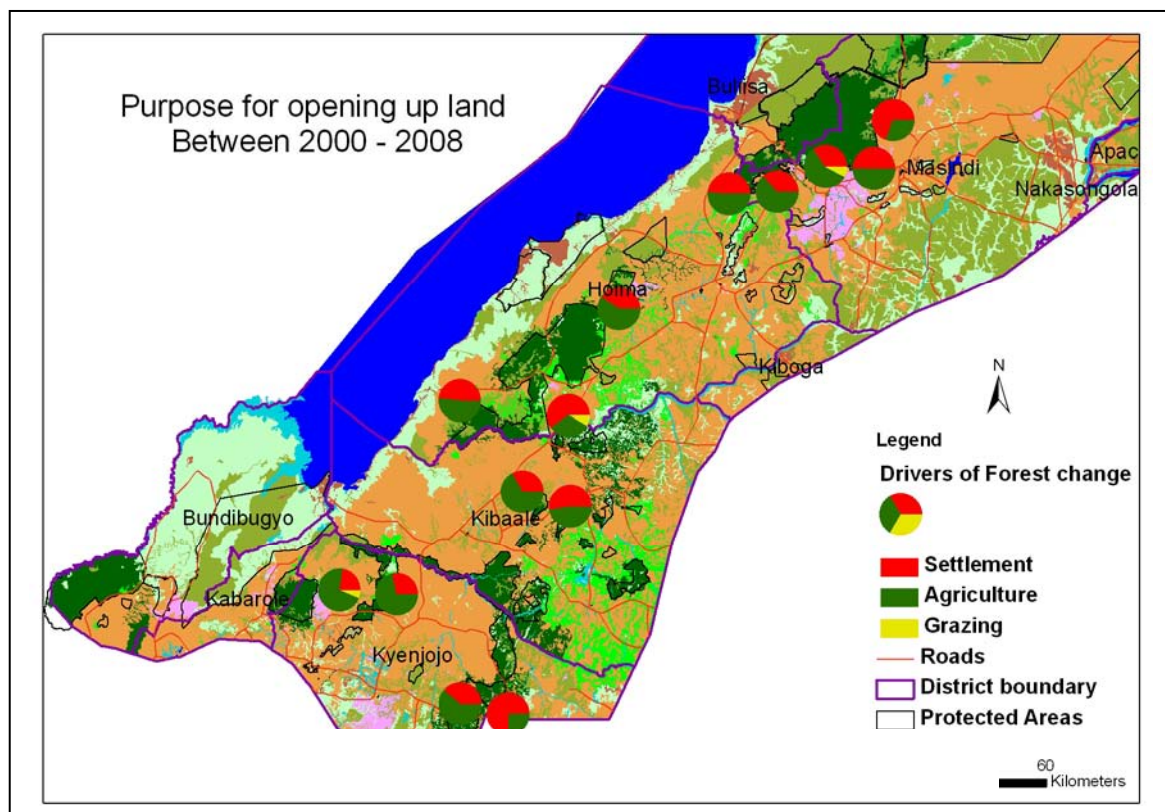


Figure 1 Key reasons for clearing forested land. Numbers refer to parishes in Table 1.

In terms of loss of forests to commercial crop agriculture, the main crops grown were tobacco, sugarcane, tea and coffee. A hundred percent (100%) of the households interviewed in Kasenene parish (Masindi) reported clearing forested land for growing tobacco followed by Kyangwali parish (84%), Nyabyeya parish (66.7%), Rwibaale II parish (66.7%) and Kidoma (62.5%) (**Figure 2**). None of the households interviewed in Kabamba and Rubango_Haikona parishes reported clearing forested land to grow tobacco. Sugarcane was reported by the households to be the major loss of forests in the parishes of Kabamba (66.7%), Rubango_Haikona (58.3%), Kibwona_Budongo (53.3%), and Igwanjura (50%) among others. Among the other commercial crops tea was reported to be the major driver of forest loss in the parishes of Mirambi (54.7%), Kidoma (16.7%), and Rwibaale_Kyankaramata (7.7%), while coffee was mainly reported in the parishes of

growing could easily become the major contributor to forest loss in the near future. This is because it involves clear felling of trees to eliminate shading, and there are varieties that can be grown in riparian areas as well.

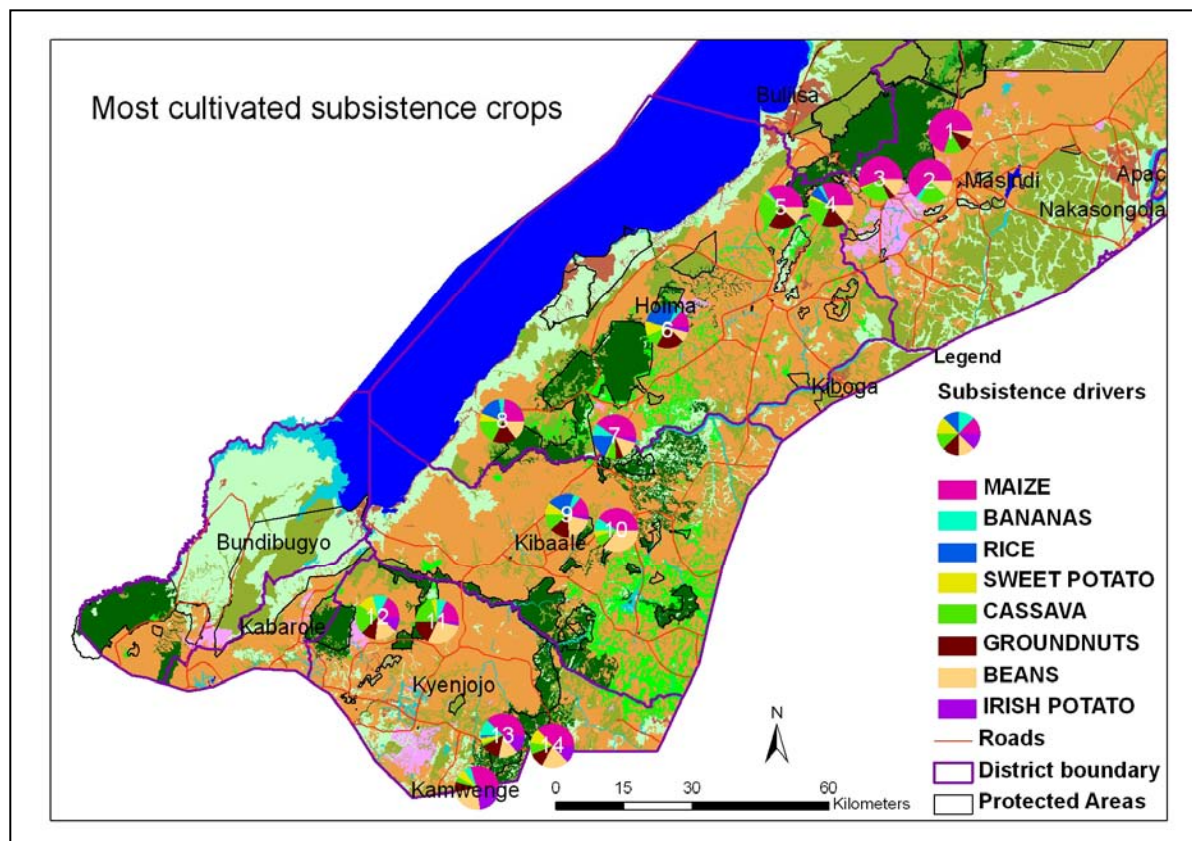


Figure 3 Subsistence crop farming that led to forest loss in the Murchison – Semliki landscape

The underlying causes of forest loss are mainly social, economic and political in nature, and operating at different spatial and temporal scales. The drivers of forest loss in the Murchison-Semliki Landscape include forest loss to subsistence crops (e.g. maize, cassava, Irish potato) and commercial crops growing (e.g. tea, sugarcane, tobacco), livestock grazing and human settlement (**Figures 1-3**). These findings corroborate well those of Mwavu and Witkowski (2008). Forests are initially logged to supply timber and poles for construction and household income, followed by settlement and planting of food crops, and later turned into grazing areas. Some of the drivers, however, operate at national and international level. At the national level, major influences include resource privatization, unclear and weak property rights (land, and tree tenure), land purchase speculation driven by inflation-and speculations over mineral deposits, highly subsidized agricultural and industrial investments, tax breaks and other financial incentives offered by the government to attract foreign investments. Operating at both the local and national scale, population growth continues to be an underlying driver of forest loss that interacts with rural economic policies, poverty, and tenure insecurity, while population and economic growth in urban areas drive continuously the demand for forest resources. At the international level, the creation of regional markets through globalization, and fluctuations in regional and global economies has adversely impacted forest resources.

In 2008, increases in agricultural prices, particularly rice and tea, and a sudden increase in power tariffs by Uganda Electricity Regulatory Authority, partly explain the increase in deforestation rate in Uganda. Indeed, government's energy policy shift toward hydro electric power to meet the demand for energy mainly

attributed to urban sprawl, and mushrooming small to medium scale industries could further diminish its efforts to slow down forest loss. Recent global demand for biofuels, including palm oil, sugarcane, maize (sweet corn) has encouraged private companies to exploit large blocks of forest for conversion to plantation agriculture. With the growing prospects for Oil and Gas exploitation in the Albertine Rift region, there is a fear that the pressure to build the infrastructure needed for Oil and Gas development could escalate the threats to wildlife conservation. Already, there is evidence that siltation and sediment deposition originating from agriculture and livestock production has caused a decrease in depth of the southern part of Lake Albert, and shifting of the shoreline (NEMA 2009). More so, the delta at the mouth of the river Nile has been reported to be expanding at a rate of 3.5 km/year into the lake due to siltation (NEMA 2009).

2.0 Public sector agencies and private sector companies consulted

A number of public agencies and private companies were identified and consulted to assess their willingness to support forest conservation in the Murchison–Semliki Landscape. The public agencies and private companies consulted are broadly categorized under agriculture, energy, water, and financial sectors (**Table 2**). A detailed description of the conservation policies and plans for the public agencies, and private sector companies consulted is provided in **Appendix 2**. A brief summary concerning each agency or company is provided in the main document. The List of public agencies, and private companies representatives consulted is provided in the **Appendix 3**.

Table 2 Public agencies and private sector companies consulted

Private Sector	Subsector	Companies/agencies consulted
Agriculture	Tobacco	British American Tobacco Uganda Limited, Uganda Tobacco Services Uganda Limited
	Sugarcane	Kinyara Sugar Limited
	Tea	McLeod Russel Uganda Limited, Toro and Mityana Tea Company (TAMTECO), Mpanga Tea Growers Company Ltd, and Mabale Growers Tea Factory Limited
Financial	Banking	Centenary Rural Development Bank, Barclays Bank Uganda Limited, Stanbic Bank
	Microfinance	Association of Microfinance Institutions in Uganda (AMFIU)
Granting agency	Plantation forests	Sawlog Production Grant Scheme (SPGS)
Energy	Electricity Generation	Hydromax Limited
	Oil and Gas	Tullow Oil Plc
Public sector		
Water	Policy agency	Directorate of Water Resources Management
	Utility agency	National Water and Sewerage Corporation
Energy	Regulation	Electricity Regulatory Authority
	Distribution	UMEME
Governance	Local governments	Masindi, Hoima, Kibaale, and Kyenjonjo

2.1 Tobacco companies

Tobacco is one of the most controversial agricultural product in the world because of the health risks it poses to producers and users, and its negative impacts on biodiversity conservation. Despite this controversy, global tobacco consumption is projected to increase to 1.6 billion 'sticks' or cigarettes per day by the year 2025 by the World Health Organization. Worldwide, tobacco is grown in more than 100 countries, but its production is mainly controlled by three multinational corporations, that is, British American Tobacco (BAT), RJ Reynolds, and Philip Morris (Hammond, 1998). In Uganda, tobacco production is dominated by BAT, which controls 93 per cent of the market through its subsidiary company BAT-Uganda (BATU).

2.1.1 *British American Tobacco Uganda*

The British American Tobacco Group was founded in 1902 and made its first expedition in Uganda in 1927 through the introduction of commercial varieties of tobacco (BATU, 2002). The following year it built a cigarette factory in Jinja town for the East African Tobacco Company, which company was later acquired in 1949 and in 1965 formed BAT Uganda Limited. After ceasing its operation for nearly 15 years due to civil unrest, BAT returned to Uganda in 1984, and repossessed 70 per cent control of the company's shareholding. In 1998 (Sejjaaka 2004), the company changed its corporate image and name to British American Tobacco Uganda (BATU). Two years later the government divested its 30 per cent shareholding, selling one-third of these shares through the Uganda Stock Exchange (USE). BATU remains a subsidiary of British American Tobacco (BAT) PLC of UK, which has effective control of 90 per cent of the authorized share capital. Local Ugandan institutions and members of the public own the remaining 10 per cent of BATU. The main activities of BATU are tobacco growing through support to local farmers, manufacturing and processing for local and international markets. Brands locally manufactured include Sportsman, Safari, Crescent and Star.

2.1.2 *Uganda Tobacco Services Ltd*

Other players in the tobacco industry include **Uganda Tobacco Services Limited** formerly Uganda Leaf Tobacco Limited a subsidiary of multinational company Universal Leaf Tobacco Company, Inc. (see <http://www.universalcorp.com/AboutUs/AboutUs-History.asp>) a US -based company. The proprietors of Uganda Tobacco Services Ltd are the former employees of Universal Leaf Tobacco Company, and are less than six months in business here in Uganda. Uganda Tobacco services Ltd operates in areas where Uganda Leaf Tobacco Ltd used to operate in the districts of Mubende, Kibaale, Kyenjonjo, and Kamwenge, and only Masindi and Hoima were dropped.

2.1.3 *Tobacco companies policy initiatives, and commitment to conservation*

Tobacco company policy initiatives with specific reference to BATU are:

- BATU is committed to supporting innovations that promote alternative energy sources and fuel efficient technologies for use in tobacco production and processing. The proposed strategies include; technology improvement and substitution (e.g. promote air-cured tobacco varieties, construct fuel-efficient curing barns for fire-cured [burley] tobacco, and construction of barns on live standing trees or planted trees for air-cured tobacco); management of fuelwood waste (i.e. promote the use of energy saving cooking stoves for its farmers and the communities where they work to reduce fuelwood consumption from the corridor forests); support tobacco farmers and communities where they work to practice agroforestry and establish eucalyptus woodlots.
- Promote sustainable agriculture, and extension services for its tobacco farmers.
- Tobacco companies are in the process of developing a joint strategy to reduce tobacco growing inside protected areas, and/or critical areas for water supply and biodiversity conservation. Only tobacco grown

by contract farmers under the supervision of tobacco companies' extension staff is to be bought. The plan is to build strong tobacco farmers networks and capacity to report non-compliant farmers for de-registration.

Tobacco companies support to forest conservation:

- support communities to plant trees on private land and restore degraded wetlands and corridor forests;
- Support the establishment of forest-based economic enterprises for communities where they operate;
- BATU, in particular, is willing to finance aerial agricultural surveys in tobacco growing areas on a 3-year cycle plan. BATU has already produced high resolution aerial photos that will soon be made available to stakeholders for conservation planning use. BATU is also interested in working with other Albertine rift stakeholders to plan for aerial agricultural surveys, particularly the identification of hotspot areas for mapping, including critical sites outside their operational areas and across the international borders. This activity will be implemented this year by Flora and Fauna International;
- Support environmental education and conservation awareness raising;

2.2 Tea companies

Tea companies consulted include Toro and Mityana Tea Company (TAMTECO), McLeod Russel Uganda Limited, Mpanga Tea Growers Factory Limited, and Mabale Growers Tea Factory Limited. Details of each tea company and its conservation policies are provided in the **Appendix 2**.

2.2.1 TAMTECO

Toro and Mityana Tea Company (TAMTECO) tea estate in Kabarole covers an area of 18,467 acres (7476.5 ha), of which 2,300 acres are mixed tea and eucalyptus. The company has its core estates located less than three kilometers from Kibaale National Park, and around Itwara Forest Reserve.

2.2.2 McLeod Russel Uganda Limited

McLeod Russel Uganda Limited (MRUL) is a subsidiary company of McLeod Borelli Tea Holdings Ltd, a Calcutta-based tea plantation major McLeod Russel India Ltd, which acquired the Uganda business of UK-based James Finlay International Holdings Ltd. MRUL is part of the Williamson Magor Group Enterprise, which was incorporated in 1869. McLeod Russel Uganda Limited owns six tea estates namely: Ankole (Bushenyi), Mwenge (Kyenjonjo), Kiko (Kabarole), Muzizi (Kibaale), Kisaru, and Bugambe (both located in Hoima). In 2001, James Finlay (Uganda) Ltd acquired these tea estates from Rwenzori Highlands Tea Co Ltd, which in 1994, bought the same business from Agricultural Enterprise Limited, a partner of Commonwealth Development Corporation (CDC).

2.2.3 Mpanga Tea Growers Company Ltd and Rwenzori Commodities Ltd

Mpanga Growers Tea Factory is a private company owned by small holder tea growers. It was incorporated in 1995. It is located in Kabarole district producing high quality tea for the local and export markets. It is the second tea factory formerly under Uganda Tea Growers Corporation (UTGC) that was privatized by the Ugandan government with the assistance of the European Union. After privatization, small holder tea farmers were encouraged to buy shares in order to have ownership of the factory and to increase the share capital of the company. To become a member, one should be a *bonafide* land owner producing green leaf in the area where the company operates. Currently the company has a membership of 461 shareholders. Mpanga Growers Tea Factory Limited processes green leaf into high quality made tea primarily

for export, and to a small extent supply to the local market. The company has four estates: Kasunga, Kibaale, Kyapa and Demo covering 200 hectares of tea. Recently, the company bought another estate in Isunga near Kibaale National Park. The company receives green leaf from a total of 1,274 hectares of tea, including outgrowers.

2.2.4 Mabale Growers Tea Factory Ltd

Mabale Growers Tea Factory Ltd is a tea manufacturing company located in Kyabaranga Parish, Bugaaki Sub county of Kyenjojo District in Western Uganda. It is one of the tea factories formerly under Uganda Tea Growers Corporation (UTGC), which was established by an Act of parliament in 1966. It is among the four UTGC factories that were privatized and is now owned by smallholder tea farmers who supply it with green leaf. Its operational area covers a radius of nearly 100 km from its factory premises with a large concentration of its farmers located in Kyenjojo district. The company is in the process of recruiting more tea farmers in Kihura and Rwibaale, both parishes bordering Matiri Forest Central Reserve, a key forest block in Murchison – Semliki landscape for chimpanzee conservation.

2.2.5 Rwenzori Commodities Ltd.

The other large scale tea company operating in the area is Rwenzori Commodities Ltd, a subsidiary of Mukwano Group of companies. This company operates mainly in Kabarole and Kyenjojo districts, with majority tea estates located adjacent to Kibaale National Park. There are also medium-sized farmers who have set up small scale tea factories mainly in Kijura, Kyenjojo district (e.g. Kakyomya Eliya). Rwenzori Commodities Limited and other medium-sized tea companies are critical to the establishment of forest corridor.

2.2.6 Support from Tea companies toward forest corridors management and conservation

Tea company policies include:

- Sustainable fuelwood production on company land;
- Invest in energy efficient technologies for tea processing;
- Acquire Rainforest Alliance Certification;
- Pursue Fair trade agreements to benefit from the international premium prices.

Tea companies consulted were willing to support forest conservation in the following ways:

- Support outgrower farmers to plant trees on their own land to reduce fuelwood harvesting from forest corridors;
- Protect and manage natural areas, mainly wetland and riverine forests located on the company land for biodiversity conservation;
- Support community initiatives to restore degraded sub-watersheds, and conserve stream buffer zones. Effectively, they are willing to pay for water, and watershed services;
- Promote sustainable agriculture through training farmers in soil and water conservation.
- Provide extension services to its outgrower farmers and adjacent communities to improve crop yield and reduce expansion of agriculture into natural forests;

2.3 Sugar Companies

Kinyara Sugar Ltd is the only sugar company operating in the Murchison-Semliki Landscape. The other important organization related to Sugarcane production, which was identified as relevant to the corridor conservation is Uganda Sugarcane Technologist's Association (USCTA).

2.3.1 Kinyara Sugar Limited

Kinyara Sugar Limited was originally 100 percent owned by government, but recently bought by RAI group, an Asian company by origin. Kinyara Sugar Limited has at least 9,383 hectares of land suitable for sugarcane growing, but the nucleus estate occupies 7500 ha for sugarcane production. Of the remaining area, 667 ha are occupied by the factory, housing units, roads, and eucalyptus plantations, while 1,216 ha are under natural forests and wetlands. Recently Kinyara Sugar Limited purchased 50 acres of customary owned forested land (in Kasokwa) adjacent to NFA managed central reserve. The forest patch is known to support a group of chimpanzees. In addition, 75 ha have been purchased from individuals purely for commercial forest plantation establishment.

The Uganda Sugarcane Technologist's Association was formed in 1994 and has an enthusiastic membership of 168 people comprising technical staff and managers from the three Ugandan commercial sugar producers, independent farmers and government officials (USCTA 2010). USCTA was identified as a relevant organization to engage in the corridor management planning process because two of its objectives focus on promoting environmentally friendly sugarcane agriculture. These objectives are:

- To minimize, and where possible eliminate the risk of harmful effects of Sugar production on the environment and promote environmentally sound husbandry.
- To promote research into all aspects of sugar cane agriculture, sugar milling practice and by-product development.

2.3.2 Support from Kinyara Sugar Limited toward forest corridor conservation and management

Company conservation policies documented are:

- Invest in efficient sugarcane production technologies (e.g. green sugarcane harvesting);
- Manage waste by producing renewable energy from bagasse that can be sold to Uganda Electricity Distribution Company Limited
- Acquire Rainforest Alliance certification.

The Kinyara Sugar Limited is willing to contribute to forest conservation in the following ways:

- Reserve land under natural habitats such as forests, wetlands for conservation purposes;
- Pay for conservation threats monitoring, particularly its impacts on the environment;
- Support farmers to engage in sustainable agriculture focusing on soil and water conservation practices;
- Support communities to protect water source points;

- Invest in ecotourism development, and work with adjacent communities to promote conservation of forest patches around Budongo and Kasokwa Forest Reserves.
- Support environmental education and awareness raising.

2.4 Energy companies

The energy companies surveyed include UMEME, Hydromax Limited, and Oil and Gas companies, particularly Tullow Oil.

2.4.1 Electricity Power Agencies

The restructuring and privatization strategy of the power sector started in 1999 resulting in the privatization of the former government owned utility, Uganda Electricity Board (UEB). The Ministry of Energy and Minerals Development established the Electricity Regulatory Authority (ERA), which is responsible for policy formulation and regulation, and Rural Electrification Agency (REA) in charge of rural electrification. UEB was restructured to form three state owned agencies namely

1. Uganda Electricity Generation Company Limited (UEGCL);
2. Uganda Electricity Transmission Company Limited (UETCL); and
3. Uganda Electricity Distribution Company Limited (UEDCL).

In terms of state owned agencies, REA is by far the most critical agency to corridors conservation in Murchison – Semliki landscape. REA activities are guided by the Rural Electrification strategy and Plan (RESP), and the Rural Electrification Fund objectives, which do not include the conservation of wildlife corridors. REA projects are driven by market demands mainly from the private sector, local communities and priority needs specific to a rural area determined by the central government. As such, REA activities are expected to affect the land use in rural areas through the alignment of electricity transmission lines and other associated infrastructure development. This is important because it further creates barriers to wildlife movement, and edge effects around and inside protected areas. At the moment, funding for these projects is sourced from money approved by parliament of Uganda, any surplus monies made from the operations of the ERA declared to the Minister of Finance and paid into the electricity for rural transformation fund. Other funding sources include a five percent levy on transmission bulk purchases of electricity from generation stations, donations, gifts, grants, and loans acceptable to the ministers of energy and finance from World Bank, Swedish International Development Agency (SIDA), NORAD, and Japanese Technical Corporation (JICA). It might be useful to sell the concept of wildlife corridors to the donor agencies that have a direct influence on the activities of REA and allocation of the Rural Electrification Fund.

Restructuring of UEB was followed by the privatization of electricity generation, transmission and distribution services, which paved way for private companies to invest in the power sector. For example, UMEME, a private company that participated in this survey was licensed to carry out retail power distribution services in urban areas. UMEME is supporting communities to plant trees and would be interested in supporting environment awareness raising among urban dwellers. UMEME, however, was quite reluctant to show commitment to support conservation activities in the corridor areas because its activities are limited to urban areas.

2.4.2 Hydromax Limited

Hydromax is a renewable energy company that is developing a nine mega watts run-of-river project with an annual production of 53.68 MWh (design value) under the Clean Development Mechanism. The hydropower dam is being constructed on the River Wambabya in Buseruka sub-country in Hoima district, western Uganda at the flanks of the Western Rift valley overlooking Lake Albert. The project is being financed by Hydromax Limited, African Development Bank (AfDB), PTA bank (Eastern and Southern African Trade and Development Bank), the government of Uganda, and the Danish Energy Agency, Ministry of Climate and Energy. The hydropower project intercepts a catchment area of 745 Km², an intake pond storage (Reservoir) of 0.1 metric m³, and a canal length of 1.4 kilometers. The project is expected to produce an annual average of 32,858.75 tonnes of CO₂ emissions over a 10-year crediting period, and a total estimated reduction in CO₂ emissions of 328,587.53 tonnes. Hydromax is a co-funding partner in the GEF PES project, which aims to be a good model of how to engage with private companies to secure commitment to conservation.

2.5 Oil and Gas in the Albertine rift

Since 2008, major discoveries of oil have been made along the Albertine Rift in Western Uganda. Reserves of at least 800 million barrels have been confirmed to date, and the basin is now believed to contain up to two billion barrels of oil (details on the exploration sites are provided in the **Appendix 2**). Considerable uncertainty surrounds the figures and it is unclear at this stage how much of this oil is commercially 'recoverable' and how many barrels a day will be produced. According to Global Witness, (a London-based non-governmental organization that investigates and campaigns to prevent natural resource-related conflict, corruption and associated environmental and human rights abuses) "successful development of oil and gas in Uganda, will depend largely on the government's near-term policy decisions, especially regarding resource management, revenue management, and environmental management." Huge investments in infrastructure – estimated at US\$10 billion – will be needed to produce, transport, export, and refine the oil. Limited production of 10,000-20,000 barrels per day, primarily for domestic use, could start within two to three years, using trucking and railroad transportation. Full scale production could be reached in five to seven years, once downstream infrastructure is in place. To prepare the sector, the government adopted a National Oil and Gas Policy for Uganda in 2008. The policy goal is to use the country's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society. The guiding principles are efficient resource management, transparency and accountability, competitiveness and productivity, protection of the environment and conservation of biodiversity, and capacity and institution building.

The Petroleum Exploration and Production Department (PEPD) under the Ministry of Energy and Minerals Development developed an Oil and Gas Revenue Bill yet to be presented to parliament, and the general public for comments. Some of the proposals presented in the Oil and Gas Revenue Bill include setting up a fund at least from the revenue generated to deal with conservation issues. The draft bill which was produced needs more work. The draft bill has been criticized by civil society organizations for inadequate legislation to ensure the creation of a centralized Fund to account for petroleum receipts. The Bill provides for some strong protections against environmental risk, but stakeholders may want to consider tightening provisions and protections in certain areas such as the right to approve the "Field Development Plan" to guard against avoidable environmental damage.

2.5.1 Oil and Gas companies

The government has so far licensed five exploration areas out of a total of nine. The licensing details for the exploration areas are provided in **Appendix 2**. The companies so far licensed include Tullow Oil Plc of United Kingdom, Canada's Heritage Oil, Neptune Petroleum, and Dominion Petroleum. The later company is operating in southern parts of Lake Edward and George. Tullow Oil Plc holds the largest share of the

exploration areas. Tullow proposed to the Government of Uganda a partnership with CNOOC and Total where all three parties would share a one third interest across all its three licenses. In March 2011, Tullow and its new partners signed Sales and Partnership Agreement after signing a Memorandum of Understanding (MOU) with the Government of Uganda.

2.5.2 Conservation policies and support to conservation of forest corridors with specific reference to Tullow Oil Plc.

The licensed Oil and Gas companies operational in Uganda are just in the process of developing conservation policies and plans with respect to the oil and gas exploration activities. Tullow Oil Plc developed Tullow Oil Environmental Standards (TOES) as a policy tool to address environmental challenges associated with its activities. The tool is currently being reviewed to accommodate the changing environmental challenges. TOES acts as a framework through which the company is expected to address the five key elements of commitment to the environmental: biodiversity, climate change, resource management, stakeholder engagement and monitoring and evaluation. The company is committed to establishing both a carbon and a biodiversity offset scheme, particularly supporting the corridor from Bugoma to Kabwoya. National Environment Management Authority, a member of the Business and Biodiversity Offset Programme (BBOP) is working with the oil companies to develop biodiversity offsets. Detailed explanation of BBOP is provided in the section on potential sustainable financing mechanisms.

2.6 Financial institutions

Financial institutions consist of the four tiers namely:

1. Tier I Financial Institutions: this class includes commercial banks (e.g. Barclays, Stanbic, Centenary Rural Development Bank) which are authorized to hold checking, savings and time-deposit accounts for individuals and institutions in local as well as International currencies.

2. Tier II Financial Institutions: these include Credit and Finance companies. They are not authorized to establish checking accounts or trade in foreign currency, but authorized to take in customer deposits and to establish savings accounts. They are also authorized to make collateralized and non-collateralized loans to savings and non-savings customers. These are Mercantile Credit Bank, Opportunity Uganda Limited (100% subsidiary of Opportunity International), and Post Bank Uganda.

3. Tier III includes microfinance institutions (also known as Microfinance Deposit-taking Institutions or MDIs), which are allowed to take in deposits from customers in the form of savings accounts. MDIs are not authorized to offer checking accounts or to trade in foreign currency. Most popular institutions in Uganda are FINCA Uganda Limited, Pride Microfinance Limited, and Uganda Finance Trust Limited.

4. Tier IV includes institutions that are not regulated by the Bank of Uganda (e.g. African Development Bank, East African Development Bank, and Uganda Development Bank). They are not authorized to take in deposits from the public. However, they may offer collateralized or non-collateralized loans to the public.

2.6.1 Commercial banks

In this study, financial companies in Tier I (e.g. Centenary Rural Development bank, Barclays bank, Stanbic bank) and Tier III represented by Association of Microfinance Institutions in Uganda (AMFIU) were consulted. The profiles and conservation policies for these financial companies are provided in **Appendix 2**.

2.6.2 Support from financial institutions toward forest corridors management and conservation

Financial companies are willing to support the conservation of the forest corridors in the following ways:

- a) Provide credits to private companies, and individuals investing in biodiversity enterprises, and sustainable agriculture;
- b) Develop agreements, guarantees, and financial products specifically for forestry-and agricultural-related investments to mitigate risks to ecosystem services provisioning;
- c) Provide grants to communities, conservation organizations, and government environmental agencies to plant trees under the Corporate Social Investment or Corporate Social Responsibility;
- d) Support training of credit/loan officers in social and environmental risk assessment and management;
- e) Provide technical input in the financial viability analysis of proposed Oil and Gas production Scheme in the Albertine Rift;
- f) Association of Microfinance Institutions in Uganda (AMFIU) is willing to act as a link between the microfinance organizations and conservation organizations to organize, and develop a training program for credit officers on social and environmental risk assessment. Both the annual microfinance workshop held every year in May, and the Informal Information Exchange (IIE) meetings organized on quarterly basis could be used as a platform to educate microfinance organization managers about conservation issues. There is also an opportunity for microfinance organizations to include family planning education as one of their thematic areas;
- g) Association of Microfinance Institutions in Uganda is willing to partner with conservation organizations to educate microfinance organizations (microcredit providers) about the business opportunities that conservation-related projects offer to the financial sector, and to a limited extent mobilize their clients (microcredit seekers) to benefit from conservation-related business opportunities.

2.7 Sawlog Production Grant Scheme (SPGS)

Sawlog Production Grant Scheme is a joint initiative between the Government of Uganda, the European Union (EU) and the Government of Norway aimed at encouraging private sector involvement in commercial timber plantations in Uganda. SPGS provides grants and technical support to private sector investors in timber and large transmission pole crops. Over a period of five years (Oct 2004 – June 2009), SPGS supported private investors to establish 11,000 hectares of commercial plantations, and over 110 contracted SPGS clients and 40 community planting associations benefited directly from SPGS. SPGS has an ambition of establishing 30,000 ha by the end of 2013. Over 70 percent of this total is aimed at small-medium growers (i.e. up to 500 ha), and 2,000 hectares to be established through its community support initiative. Under the community support program, SPGS supports communities (e.g. churches, schools) to establish commercial plantation purely for fuelwood supply. On average, it costs UGX 1.2 million per hectare (US\$540) to establish a plantation over a range of sites in Uganda. The main tree species of interest include *Pinus caribea* with a rotation period (RP) of 15-20 years, *Eucalyptus grandis* (RP 8-12), *Maesopsis eminii* (RP 18-25), and *Tectona grandis* (RP 25-30). SPGS funding structure is as follows: growers of 25 – 500 ha receive UGX 850,000/ ha paid in three installments, while growers of 501-3000 ha receive UGX 600,000/ha. More importantly, the SPGS client retains the ownership of the trees planted. SPGS, however, does not support farmers or private investors who propose to cut down natural forests to plant exotic tree species. Unfortunately, SPGS is unable to promote planting of indigenous tree species, except *Maesopsis eminii* due to the lack of a credible source of seedlings.

Following the discussions with SPGS management, a number of opportunities exist to support corridor conservation in Murchison-Semliki Landscape. SPGS is willing to:

1. support small-medium farmers interested in establishing commercial plantations;
2. partner with Albertine Rift Forestry Carbon Group members (e.g. WCS, WWF, JGI, CSWCT, ECOTRUST, NAHI) to support farmers with natural forest patches on their land to protect them and position them to benefit from forest carbon finance;
3. create awareness about the market-based incentives for private landowners to protect natural forests or restore degraded ones during SPGS clients meetings. SPGS is willing to share information concerning their clients as a potential mechanism to reach out to private landowners to engage in tree planting at a profitable scale.

2.8 Support from District local governments toward forest corridors management and conservation

The district local government political, and civil service structures of Masindi, Hoima, Kibaale, and Kyenjonjo provide an opportunity to support the protection and conservation of forest corridors in Murchison-Semliki Landscape. First, the local council system (LC I-LCV), in itself is a framework for resources mobilization, information flow, and regulation. The political wing is responsible for budget allocation and accountability, a process that is critical to financing of natural resources management, including forestry. On the other hand, the civil servants are the technocrats of district local government in charge of planning, budgeting, and supervision of programs. The civil servants, particularly the environment and natural resources department staff present a great opportunity to incorporate or strengthen and prioritize corridor conservation activities in the district environmental action plans. Thus, district local government structures, and its physical resources should be exploited during development and implementation process of the Murchison-Semliki Landscape strategic action plan. Fortunately, some of the proposed strategic interventions are already incorporated in the district development plans. For example, in the study of the eco-social situation of the Albertine Rift Forest areas around Bugoma and the corridor between Bugoma and Budongo Central Forest Reserves, Nsita (2009) noted that 70% of the stakeholders reported that the local governments have moderately incorporated forestry in the districts, and subcounty development plans, while 44% of the forestry issues have been moderately captured for financing in their annual budgets.

The institutional framework for the water and environment sector is a good learning experience for public-private sector partnerships in the management of water resources. At the local level, communities and district local authorities have been able to work well in developing water resources projects. At the top level, the Ministry of Water and Environment through its relevant agencies/departments has been able to coordinate water development activities with all relevant ministries such as the Ministry of Local Government, Ministry of Energy and Minerals Development, Ministry of Trade Tourism and Industry, Ministry of Agriculture Animal Industry and Fisheries, Ministry of Education and Sports, Ministry of Finance Planning and Economic Development, and Ministry of Health. This has been possible because of the sector-wide planning policy and legal frameworks in place. For example, the National Constitution 1995, article 237 (2) b provides that the *“Government or Local Government as determined by parliament by law shall hold in trust for the people and protect natural lakes, rivers, wetlands, ground water, natural streams, forest reserves, game reserves, national parks and any other land reserves for ecological and touristic purposes for the common good of the citizens of Uganda.”* As such, several enabling laws do exist such as Land Act cap. 227 section 44 and section 45; Local

Government Act; Water Act; Forest and Tree planting Act of 2003; Wildlife Act; the National Environment Act; and Environmental Impact Assessment Regulation and National Environment (Wetlands, River banks and Lake Shore) Regulation 2000, and the National Wetland Policy 1995.

WWF has been raising the interest of district local government authorities toward forest corridor conservation and secure commitment to implement activities that reduce forest loss in the Murchison-Semliki Landscape. The district local governments are willing to do the following in support of corridor conservation:

- Development of, and enforcement of ordinances (district level), and bye-laws (subcounty level) related to forest conservation;
- Incorporation of corridor conservation activities in the environment action plans, and in-kind contribution to financing corridor conservation budgets;
- Mobilize community support and create environmental awareness;
- Under the REDD+ scheme, local governments will be helpful in the process of registering private forest owners and securing land titles.

3.0 Financing of biodiversity conservation

The global community spends nearly US\$1.5 billion each year on biodiversity conservation (Ghazoul and Sheil 2010). An additional US\$500 million is spent on development projects that include a biodiversity conservation component (Nielsen and Rice 2006). According to the UNDP-GEF current records, US\$830 million has been disbursed in GEF funding, and leveraged a further US\$1.3 billion to tackle biodiversity loss (UNEP 2009). Collectively, the global willingness to pay for conservation amounts to appropriately US\$5 billion annually (Ghazoul and Sheil 2010). The estimated total annual cost for effective management of the existing protected areas in developing countries alone ranges from US \$1.1 billion to \$2.5 billion per year, and a funding shortfall (i.e. total cost minus current funding) greater than US\$1 billion, and perhaps best estimated at US\$1.3 billion, exists as the median estimate of this shortfall (Bruner et al. 2004). The issue of “who pays” to conserve forests and maintain their biological diversity offers an opportunity to design environmentally sustainable development programs. As such, an array of innovative sustainable financing mechanisms have proposed and tried in some developing countries.

3.1 Innovative sustainable financing mechanisms

Richards (2000) provides a detailed analysis of the potential innovative incentive mechanisms for sustainable forestry financing, and discusses their limitations. Broadly, these are classified as 1) transfer payments involving the transfer of costs or benefits between different stakeholders, including fiscal market-based instruments and international transfer payments; 2) market-based approaches based on public good benefits (e.g. water commoditization, ecotourism charges, carbon offset trading, certification of forest products, fair trade); and 3) property rights approach (e.g. community usufruct rights, tradeable development rights, intellectual property rights). Powell & White (2001) presented a typology of incentive mechanisms according to the degree of government intervention in the administration of the mechanism, distinguished in three ways, that is, self-organised private deals, trading schemes, and public payment schemes. Market-based approaches, particularly payment for ecosystem services (PES) is gaining popularity in developing countries. Therefore, potential application of PES as a financing mechanism is discussed below.

3.1.1 Payment for Ecosystem Services (PES)

Payments for ecosystem services (PES) have attracted increasing interest as a mechanism to translate external, non-market values of the environment into real financial incentives for landowners to provide environmental services (ES) (Engel et al. 2008; Wunscher et al. 2008). The goal of PES programs is to make privately unprofitable but socially-desirable practices become profitable to individual land users, thus leading them to adopt them. The payment for ecosystem services could be in the form of direct cash payments, renting or purchase of development rights to land set aside for conservation. Examples of PES schemes include Carbon credit trading, REDD +, payment for watershed services, and conservation concessions. Briefly, conservation concession is a voluntary agreement whereby a government and/or other affected stakeholders are compensated for foregoing the consumption of ecosystem goods or economic development on public lands (Ferraro and Kiss 2002). Conservation concessions are a growing area of direct payment, in which conservation organizations bid against logging companies to win logging concessions and take them off the market (e.g. Guyana and Peru conservation concession schemes are financed through Conservation International's Global Conservation Fund). Rather than paying for the right to exploit resources, as would be in the case of logging, and mining concession, the buyer agrees to pay for the preservation of the forest concession from other uses ((Nielsen and Rice 2006). Conservation concessions may not be practical in the corridor forests, but a potential option for strengthening the conservation of central forest reserves in the landscape.

The best known example of a PES scheme from a developing country is the environmental service program in Costa Rica, which pays land owners in key watershed areas to maintain forest or reforest degraded slopes. Land owners agreed to be paid US\$40 per hectare based on delivery of four services: mitigation of greenhouse gas emissions, watershed protection, biodiversity protection, and natural scenic beauty (Rojas and Aylward 2002). In the same country, La Esperanza Hydropower Project is paying US\$10 per hectare of watershed service as a means of assisting the Monteverde Conservation League (MCL) to protect the forest effectively well (Rojas and Aylward 2002). Experiences with PES in this particular country have shown that markets for environmental services are not a panacea to conservation challenges. According to Porras (2010), PES schemes involve multiple and expensive transaction costs and most of the requirements are in form of fixed costs that weigh more heavily on small property holders. In addition, high community dependency on the forest resources and the lack of adequate technical capacity for developing countries to value resources (Fearnside 1997; Ghazoul and Sheil 2010; chp17, p.377) are significant barriers to the design of the payment system for the environmental services.

3.1.2 Carbon Markets, and Forest carbon trading

Carbon markets include compliance markets like the clean development mechanism (CDM) created under the Kyoto Protocol, and voluntary markets for carbon credits that are not subject to government regulation. Globally, deforestation is estimated to contribute about 20% to global carbon emissions, and market value of forest carbon credits is estimated to be US\$149.2 million, mostly through transactions in voluntary markets (Hamilton et al. 2009). The application of standards in registering forest carbon projects such as the voluntary carbon standard has enhanced the credibility of forest carbon offsets. Forest carbon projects are expected to generate social and environmental benefits beyond climate change mitigation, community and biodiversity standards to validate the multiple benefits of projects. The market for carbon offsets has been growing rapidly. In the U.S.A alone, by the end of year 2007, approximately US\$54 million was spent on carbon offsets in the form of tree planting, solar energy, wind farms, and other means of reducing carbon dioxide emissions (Story 2008). The market consists of a growing number of firms, brokers, and others who specialize in offset transactions such as Terra Pass, Carbon fund, and the Chicago Climate Exchange. These firms act as intermediaries between those who are supposedly producing carbon reductions, either through

reducing emissions or increasing carbon sequestration, and corporations and individuals who want to buy these reductions to offset their own emissions.

3.2 Potential sustainable financing mechanisms for Murchison – Semliki landscape forest corridors

In the Murchison-Semliki Landscape, potential sustainable financing mechanisms for corridor management and conservation have been identified. These are broadly categorized as direct, indirect financing mechanisms, and conservation strategies.

Direct financing mechanisms

3.2.1 Reduced Emissions for Deforestation and Forest Degradation (REDD) Plus

Another global framework that has emerged is the Reduced Emissions for Deforestation and Forest Degradation (REDD) that is also expected to compensate countries that reduce CO₂ emissions through funding as well as market-based carbon offsets transactions. The REDD programme was launched in 2008 by the UN Secretary General Ban Ki-Moon and Norwegian Prime Minister Jens Stoltenberg. The global REDD strategy requires substantial financing and only half a dozen rich countries, including Norway and Britain have pledged to provide US\$4.5 billion by 2012. Norway is financing the first phase of the REDD programme for US\$ 35 million, and Tanzania is among the first of four beneficiaries. Funding for REDD thereafter is uncertain, although it has been assumed that carbon markets would provide with “forest carbon credits”, measured per ton of avoided emission, being bought to offset industrial countries’ emissions. According to Lewis et al. (2009), African rain forests are estimated to have been absorbing 340 million tonnes of carbon per year in recent decades, an amount that is roughly equivalent to the total emissions from deforestation in Africa. Based on the current voluntary market prices, Butler et al. (2009) argued that REDD is unlikely to offset the opportunity cost of allocating forested land to agriculture or timber production. At the moment, the main compulsory market, Europe’s emissions trading scheme (ETS), does not accept forest carbon credits. To improve the long-term economic prospects of REDD, the US needs to agree to adopt an equivalent cap-and-trade arrangement, and both carbon markets systems adjusted to permit forest carbon credits. The REDD mechanism will also need to be incorporated within a Kyoto-sanctioned compliance market where higher carbon credit prices (e.g. US\$30-50/per ton of carbon) can be expected (Butler et al. 2009). Fortunately, Uganda is in advanced stages of preparing for REDD. National Forestry Authority is leading the process of preparing a REDD+ Readiness Preparation Proposal (REDD+ R-PP) for submission to the Forest Carbon Partnership Fund (FCPF) for funding. A number of PES-related projects are being implemented in Uganda, examples of which are provided in **Appendix 2**. This new innovation has generated a lot of interest leading to the design and implementation of studies on environmental markets, and the potential for REDD initiatives to deliver conservation benefits. For example, the Budongo-Bugoma Landscape REDD+ feasibility study conducted by Katoomba Group (based on secondary data) showed that over 27000 ha forests have the potential to generate 1.01 million tCO₂e over the first 10 years (Ebeling and Namirembe 2010). At a price of five USD/ tCO₂e, the net revenues were estimated at USD 2.9 million after 10 years (Ebeling and Namirembe 2010), which would partly finance conservation activities. A similar study conducted in Mabira Forest Reserve by Nabanoga et al. (2010) concluded that the differences in carbon stocks generated under the REDD initiatives compared to the agricultural activities would result in high levels of carbondioxide emissions. Thus, the green house gas emissions produced from agricultural production could be avoided, making REDD a net benefit maximizing long term strategy for conserving forests in Uganda.

WCS with funding from UNDP-GEF/WWF has implemented a field-based feasibility study to assess the potential carbon benefits under the REDD+ initiatives to finance the management of forest corridors in Murchison – Semliki landscape. The study focused mainly on a mosaic of private and community forests, 122,876 ha of forest predominantly in small patches of up to several 100 ha located in the districts of Hoima, Kibaale, and Kyenjojo. WCS used both botanical plot data and remote sensing techniques to calculate the estimated carbon benefits. The results of this study show that large majority of forests in the landscape are tropical high forest fully stocked with an average carbon density of 440 tonnes of carbon dioxide emissions per hectare ($\text{tCO}_2\text{e/ha}$) and 165 $\text{tCO}_2\text{e/ha}$ for degraded tropical high forests (Miguel et al. 2011). The estimated emissions from conversion of forests to annual crops farmland is estimated at 410 $\text{tCO}_2\text{e/ha}$. The deforestation rate outside protected areas is 5.1 % annually (8367 ha) based on historic deforestation between 2006 and 2010. Baseline emissions from deforestation and degradation are calculated at 1.7 million tCO_2 in the first year and level off to a maximum of 31 M tCO_2 in year 15 including a 30% discount for leakage and average annual discount of six percent for non-performance (Miguel et al. 2011). The study also showed that the benefits from forest regeneration are relatively small with 304,339 tCO_2e per year excluding a discount of 30%. Net carbon benefits are projected to be 15 million tCO_2 on average per year for the first 14 years and 31 million tCO_2 on average per year afterwards. The carbon buffer for Verified Carbon Standards (VCS) could be drawn from above ground biomass alone or from below ground biomass and trees smaller than 10cm in diameter at breast height (DBH). Following the above analysis, net revenues from avoided deforestation are projected to reach 78 million United States Dollars (5 USD/ tCO_2e) on average per year for the first 14 years and a maximum of 153, million USD over the rest of the project life time. Net revenues from carbon credit sales take into account transaction costs for project development, monitoring, validation and verification, registry and issuance fees. The commercialization model is assumed to be a forward sale of issued credits at a lower carbon price to secure upfront payments, with a higher carbon price after validation and verification.

The results of the study imply that successful implementation of the project will depend heavily on the carbon market forces, private forest owner's willingness to accept compensation, and political environment. The carbon market is an open market and carbon buyers may avoid complex project sites if the risks are considered to be high. Importantly, if the opportunity cost to land by the private forest owners is high, the REDD+ revenues generated will not be sufficient to offset these costs. According to results of a socioeconomic study conducted under WCS/GEF-WWF Albertine rift forests project, 50 percent of the households living in the corridor areas interviewed ($N = 340$), earn less than USD 1,500 annually, while 40 percent of the households earn between USD1500 and USD5500 per annum mainly from agricultural crops (e.g. rice, tobacco, groundnuts, rice, maize, banana, beans, sugarcane), and timber from forest. The rest of the households earn USD5500-30000 per annum. According to the REDD+ feasibility study results, the break-even point for direct payments to offset opportunity costs for an annual household income of USD3500 varies greatly with the forest carbon density (100 – 500 $\text{tCO}_2\text{e/year}$) and forest size (ha) of each household. For example, a household that has an annual income of USD3500 will require 700 $\text{tCO}_2\text{e/year}$ (at a rate of USD5/ tCO_2e) to earn the same amount of cash. Given a highly degraded forest with carbon density of 100 $\text{tCO}_2\text{e/year}$, a household will require a forest size of 10 hectares to produce 700 $\text{tCO}_2\text{e/year}$ to able to break-even. Considering the same annual income of USD3500 and a forest carbon density of 500 $\text{tCO}_2\text{e/year}$, the household will need to own only 1.4 hectares of forest to emit 700 $\text{tCO}_2\text{e/year}$ and break even. The implications of the results are that the management plans, and investment options have to be developed and customized according to the households' forest carbon densities. It is quite obvious that a significant proportion of payments will go to areas with lower opportunity costs, that is, relatively wealthy households and private companies. Alternative sources of income to offset the opportunity cost have to come from somewhere else other than the carbon revenues. These could include green commodity benefits from shade-grown coffee, and other suitable agroforestry activities. The government of Uganda through the National Agricultural Advisory Services (NAADS), and USAID's Global Development Alliance programme could support the proposed income generating activities. Experiences from UNEP-GEF PES project titled " Developing an Experimental

Methodology for Testing the Effectiveness of Payment for Ecosystems Services to enhance Conservation in Productive Landscapes in Uganda” will be very valuable toward the design of effective REDD+ initiatives. The project aims to “test the effectiveness of PES as a viable means for financing and procuring biodiversity conservation outside protected areas using an experimental methodology.” The project is still in its infant stages, however, a number of lessons have been learned. These are:

1. The land, and carbon rights of the poor participants in the scheme need to be assured if they are not going to be dispossessed.
2. The complexity of engaging in environmental markets means poor communities will need to work through intermediaries, or brokers, such as national NGOs, co-operatives, and local associations.
3. Project planning, design and implementation should be responsive to the political, social, and environmental contexts.
4. PES market contracts need to be designed in a clear, transparent and equitable fashion.
5. Training of communities in PES, financial management, and monitoring and evaluation is very critical to successful implementation of the project.
6. It is important to develop robust, and yet easy to understand methodologies to measure the project outcomes and impacts.

3.2.2 Carbon trading and clean development mechanisms funding opportunities

The Clean Development Mechanism (CDM) under the Kyoto Protocol provides financial support, in the form of marketable credits, for mitigation actions. The Kyoto Protocol funding is available up to 2012. In preparation for the post 2012 Kyoto Protocol financial support, UN Secretary General established a High-Level Advisory Group on Climate Change Financing to develop practical proposals on how to significantly scale-up long-term financing for mitigation and adaptation in developing countries. Some of the potential sources of finance identified by the UN Advisory Group on climate change financing include public sources grants, development bank type instruments, carbon market finance and private capital. The Protocol also established an Adaptation Fund to finance concrete adaptation projects and programmes in developing country Parties to the Protocol. This is a potential source of funding for conservation-related investments in the Murchison-Semliki Landscape, mainly through joint government-private partnerships. The ministry of water and environment through the National Forestry Authority and other key government agencies such as Uganda National Council for Science and Technology, Uganda Industrial Research Institute, Private Sector Foundation and the private companies (e.g. Hydromax Limited, Kinyara Sugar Limited) provide an opportunity for joint implementation of adaptation projects in the region. For example, a group of smallholder farmers in East Africa are set to benefit from one of the first soil Carbon projects in Africa to be financed by the World Bank. The World Bank has earmarked US\$350,000 for the project that will be implemented by the Swedish NGO - Vi Agroforestry in Nyanza and Western Provinces of Kenya on a 45,000 hectare site and expected to generate carbon credits which will be sold to the Bank-administered BioCarbon Fund (Farmer 2010). Some of the project practices include the use of cover crops, crop rotation, compost management and agro-forestry. Green Resources AS has been awarded a €350,000 grant from the Nordic Climate Facility (NCF) to develop a clean and sustainable charcoal project in partnership with Busoga Forestry Company in Jinja, Uganda. The project is expected to install modern, methane-free charcoal kilns capable of producing 7,500 tonnes of charcoal annually, enough to supply 9,000 households a year, as well as developing a briquetting line. From a conservative estimate, this technique will save approximately 15,000 tonnes of carbon dioxide per year. Development of biogas plants for commercial crops farmers could be a viable project for funding under the Kyoto Protocol.

3.2.3 Payment for water, and watershed services

Private businesses depend heavily on the capacity of ecosystems to provide goods and services. Ecosystem degradation, therefore, can pose a number of risks to businesses. For example, freshwater scarcity increases costs for water use, siltation and sediment deposition in rivers reduces energy output of dams, and floods disrupt marketing [distribution] of goods. Indirectly, business activities that affect the environment could suffer from poor corporate performance, brand damage due to negative campaigns, increased business regulation, including rigorous lending requirements by banks, law suits and payment of heavy fines in damages. International experience suggests that the cooperation between the public and private sectors in form of Public-Private sector Partnership (PPP) can be a powerful incentive for improving the quality of public services, and a strategy for funding conservation. Luckily, the government of Uganda recognizes this strategy and proposes to promote and integrate public-private partnership toward the implementation of the National Development Plan. The best PPP model is to develop, own, and operate joint venture projects.

In the Murchison-Semliki Landscape, the presence of the Lake Albert catchment area, rivers (e.g. Wambabya, Nkuzi, Waki) and riverine forests present an opportunity for the private companies (e.g. Hydromax Limited, Kinyara Sugar Limited, tea, and tobacco companies) and public utility agencies (National water and Sewerage Corporation, Directorate of Water Resources Management, Electricity Regulatory Authority, Electricity Generation Company Limited) to pay for water, and watershed protection because they benefit from the watershed goods and services. As consumers of environmental services, private companies should be able to contribute in form of taxes and fund voluntarily activities that help to maintain the flow of ecosystem services. Typically, payment for ecosystem services is determined by the opportunity costs of foregone benefits such as employment opportunities, economic returns from alternative land use options, and taxes in the interest of conservation. Two ways of paying for the ecosystem services by public utility agencies and private companies is proposed.

First, **mandatory licenses and permits fees** charged by the government of Uganda are a potential source of revenue. For example, hydroelectricity generation companies pay annual licensing fees for generation, distribution and sales of electricity dependent on the project capacity (Electricity Regulations of 2003). Permit fees include the permit to undertake studies and other activities (ERA), social and environmental clearance fees charged according to the project value by NEMA (National Environment Act of 1995), Surface water or groundwater fees and construction permit fees charged by Directorate of Water Development (Water resources Regulation of 1998). The government agencies responsible for collecting these statutory fees should be assisted to develop creative ways of including a watershed protection fee in licenses and permits fee structure. Similarly, innovative ways of levying a small fee to support the protection of water abstraction points from the tax categories listed below has the potential to generate finances.

- 1) Distribution tariffs, also referred to as end-user or retail tariffs charged by the distribution company;
- 2) Transmission tariffs also referred to as the 'bulk supply tariffs' charged by Uganda Electricity Transmission Company Limited (UETCL) to the distribution companies;
- 3) Generation tariff, which is the price payable by the Transmission Company, (Uganda Electricity Transmission Company Limited) for power generated and delivered to the grid by the generation companies (e.g. ESKOM, thermal plants, bagasse plants), expressed as a currency unit per MW/hr or an energy price expressed as a currency unit per kWh;
- 4) Feed-in tariffs, which are standardized tariffs based on avoided cost of the system for sales to the grid of electricity generated by renewable energy systems of up to a maximum capacity of 20MW. The feed-in tariffs

charged by Uganda Electricity Transmission Company Limited vary with the technology used (e.g. hydro, bagasse, biomass, geothermal, biogas, and solar PV).

The revenue generated could be put into a trust fund with the payout ear-marked for ongoing conservation and sustainable development programs. Second, **voluntary corporate sponsorship** from private business companies are a potential source of funds to support conservation. In this case, private companies commit funds to support communities to undertake water and soil conservation practices, beyond the corporate social responsibility programmes. Companies such as BATU, Kinyara Sugar Limited that work directly with farmers are already sponsoring communities in their areas of work to protect river protection zones, and plant trees on private land. To move beyond this approach, private companies can be encouraged to divide natural areas that constitute the potential corridors into blocks and then solicit funding commitments from consumer groups or international buyers of cash crops (e.g. coffee, tea, and sugar), development institutions, and corporation partnerships toward biodiversity conservation. This can be done through a bidding process after which an entity would take responsibility for maintaining forest cover and forest health in each block over a reasonable period of time. This could be a good strategy for corporations to become involved in conservation as a public relations building and/or marketing tool.

3.3 Compensation and Biodiversity offset mechanisms

The National Environment Act of 1995 requires that development projects, which are likely to impact the environment, an Environmental Impact Assessment (EIA) must be conducted to identify the risks and negative impacts that should be avoided, minimized and mitigated. However, in the case of projects where such negative impacts cannot be avoided or mitigated, a biodiversity offset¹ is becoming a popular tool to address those environmental concerns. Briefly, Business and Biodiversity Offsets Program (BBOP) is a partnership of companies, scientists, NGOs, government agencies, research institutes, and financial institutions, which focuses on the question of compensation for impacts on biological diversity. The biodiversity offsets can either be mandatory (required by legal and planning provisions), or voluntary (i.e. exceed the legal and planning requirements or exist completely independently from them). A biodiversity offset, however, is relevant only if the mitigation hierarchy has been pursued to avoid, minimize, and mitigate environmental impacts of development projects first. The standard practice is that negative impacts on biological diversity need to be compensated or counterbalanced by conservation or restoration measures in order to ensure No Net Loss of biodiversity.

The government of Uganda through National Environment Management Agency (NEMA) is now a member of BBOP. NEMA is encouraging the Oil and Gas companies to develop biodiversity offsets for the environmental impacts associated with oil and gas exploration. Tullow Oil Plc has already showed interest in developing a biodiversity offset scheme in the area between Bugoma and Kabwoya to compensate for its activities in Murchison Falls National Park, Kabwoya, and Kaiso Tonya Wildlife Reserves. NEMA should also encourage banks to apply this tool in the banking business to reduce the underlying biodiversity risks created by those companies or individuals that receive credit for investment. By so doing, biodiversity offsets schemes financed by private companies could help to conserve forest corridors. Under this arrangement, Voluntary Biodiversity Offsets would serve as minimum standard for all companies in order to assure „No Net Loss” of Biodiversity. Biodiversity offset pilot projects being implemented in Madagascar², South Africa, and

¹ Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate prevention and mitigation measures have been implemented (website <http://bbop.forest-trends.org/index.php>.)

² Two mining companies, Ambatovy and Rio Tinto, are currently creating biodiversity offsets for their projects on a voluntary basis in Madagascar. The Ambatovy nickel mining project, is a BBOP pilot project hoping to produce net positive conservation outcomes by establishing a corridor between the existing Ankeniheny-Zahamena Corridor and the forest

Mozambique (Madsen *et al.* 2010) could provide learning lessons during the design of biodiversity offset projects in the Murchison–Semliki Landscape aimed at conserving the forest corridors.

Uganda is a signatory to the Convention on Biological Diversity (CBD) and committed to achieving a significant reduction in the current rate of biodiversity loss. BBOP initiatives will help to reinforce Uganda's actions toward achieving the CBD commitments. Thus, National Environment Management Agency (NEMA) needs to prioritize Murchison-Semliki Landscape as an important biodiversity area under Uganda's CBD conservation initiatives to reduce biodiversity loss. The Albertine Rift is the sensitivity atlas for Oil and Gas development produced by NEMA in partnership with United Nations Environment Programme (UNEP), Royal Norwegian Embassy, WWF, and WCS is an important tool for planning developments without harming the environment. This tool should be used by land use planners, development partners, and conservation organizations working in the landscape to design and implement economic development while avoiding sensitive areas.

3.4 Extractive industries resource user fees

A number of ways to generate more revenue for conservation in the long term do exist, and can be explored. These include economic rent from extractive industries, and a polluter pays principle.

3.4.1 Economic rent from extractive industries

There is a huge opportunity to capture a greater share of natural resources rent from extractive industries (e.g. timber, minerals, Oil and Gas), which needs to be explored by the government of Uganda. The resource rent is the difference between the market value of the natural resource and the full cost of extracting it. Full extraction costs include wages and salaries, depreciation of the capital stock (production machinery and structures), and the opportunity cost of the capital employed (typically an assumed 'normal' rate of return on capital). The bulk of potential revenue from rents is likely to come from fossil fuels, minerals, and forests being exploited or planned for extraction in the landscape. Efficient management of natural resources (e.g. forests, minerals, and fossil fuels) requires transparent and stable procedures, so that the profits of natural resource extraction activities can be reasonably estimated and compared to the social costs of logging, mining, oil and gas developments. It might be reasonable to explore the following proposals

- 1) National Forestry Authority should be encouraged to charge a small fee for every timber board produced in its forest estate that can be used to finance joint conservation projects around Budongo and Bugoma Forest Reserves. This intervention requires that a business and financial analyst is consulted to develop a business financing plan for the two central forest reserves in the landscape. One of the major outputs could be to propose an appropriate royalties, user fees, and fines to be charged on forest products. NFA timber production costs and revenues data is a good starting point to assess the potential for this option to generate extra revenues for conservation.
- 2) Initiate dialogue with Oil and Gas companies, and the Petroleum Exploration and Production Department in the Ministry of Minerals and Energy Development to identify mechanisms for generating conservation

surrounding the mine area, supporting the management plan for the Torotorofotsy Ramsar wetland ecosystem, expanding reforestation activities along the pipeline it will build and planning to replace forest that was removed on the mine footprint after closure of the mine. QIT Madagascar Minerals (QMM), a subsidiary of Rio Tinto, has produced offsets for its three ilmenite mines (1,217 hectares) located in rare littoral forest containing threatened and endemic species. The offsets will attempt to compensate for opportunity costs of local community impacts and claims a net gain of 5,095 hectares.

funds from oil and gas-related activities. Civil Society organizations interested in oil and gas that WWF has been supporting need to pursue this intervention further.

3.4.2 Polluter pays mechanism

Imposing environmental taxes and charges on large-scale agriculture and industrial firms that pollute the environment is one potential source of revenue to finance conserve in the long-term. By discouraging environmentally-harmful behavior through a mix of tax, and incentives, polluting firms are expected to invest in research and design to develop technologies that minimize pollution of the environment. These could include emission charges or taxes based on the quantity and quality of pollutants discharged (e.g. water effluent charges, air pollution charges) by medium to large-sized companies operating in Murchison – Semliki landscape (e.g. Oil and Gas companies, automobile garages, animal feeds and fish processing companies, sugar, and tea companies). The revenue generated can then be deposited in the conservation trust fund. This, however, requires a national policy on pollution to enable district local governments to implement the policy actions, and enforce the law. An inventory of the environmental performance by companies operating in the area by NEMA could be a good starting point.

3.5 Corporate Social Investment/Corporate Social Responsibility

Private business companies anticipate conflicts over possible private-social cost differences associated with the use and/or production of goods and services. Corporate Social Responsibility (CSR) is one of the strategies that private business companies use to address the environmental and distributional conflicts associated with their businesses. CSR involves taking actions which reduce the extent of externalized costs or avoid distributional conflicts. According to the European Union definition, CSR is a programme in which companies decide voluntarily to contribute to a better society and a cleaner environment (Heal, 2005). Most of the private business companies that participated in this survey, have a corporate social responsibility policy and are willing to support environmental projects especially tree planting. Although, the financial resources allocated for environmental programs is very small private companies such as commercial banks could be helped to develop more creative ways of supporting the environment. The relationship between banks and their agricultural credit seeking companies provides an opportunity for banks to support conservation by encouraging these companies to engage in eco-friendly investments. Fortunately, most agricultural companies are pursuing or already engaged in fair-trade, rainforest alliance certification, eco-labeling or branding of environmentally friendly products such as coffee, cocoa, and tea. Typically, the branded product will attract a premium price, and a proportion of that price can be appropriated for forest conservation. This strategy, however, may require conservation organizations to develop an economically viable business model that can be presented to the farmer's associations, agricultural companies, and the banks, and create a clear link between conservation and the incentives offered to the key producers. The opportunity is that most private companies do recognize that they generate social costs far greater than the private costs. As such, these business companies have a CSR department with clear CSR policies aimed at bridging the gap between private and social costs.

Some of the innovative ways in which corporate social responsibility programs could be strengthened to deliver measurable impacts are:

- 1) Extend financial support to commercial agricultural companies to develop carbon offset schemes or work with farmers directly through an intermediary to plant trees or restore degraded forest, and in return the banks sell the carbon credits.

- 2) Make direct payments for the protection of private forests under the REDD+ initiatives, including renting of land from private owners for conservation purposes, particularly land bordering streams or riparian forests.
- 3) Set up corporate awards and endorsements. Grants can be extended to community based organizations, forest owners associations, and vulnerable groups to stimulate and support activities that drive ecosystem improvement, nature conservation and sustainable use of natural resources. For example, private companies can be encouraged to select corridors of their choice, and help to fundraise for their conservation. This can be organized in form of annual corporate business competition challenge. Commercial banks are already involved in Social and Environment Investment challenge competitions for East Africa. The event is organized annually under global theme; people, prosperity and the planet (P3).
- 4) In the mid-term, banks should consider financing socially responsible investments (SRI) that meet social and environmental risk standards. Currently, most international banks are voluntarily adopting the Equator principles (www.equator-principles.com), a financial industry benchmark for determining, assessing and managing social and environmental risk in project financing. Under this particular arrangement, a bank provides loans only to those projects whose sponsors can demonstrate to the satisfaction of the bank management, their ability and willingness to comply with comprehensive processes of achieving sound environmental management practices and standards.

3.6 Tourism-based revenues

Tourism is an important sector for Uganda's economic growth and development, ranked the second largest foreign exchange earner for the country. Capital investment in Uganda's Travel and Tourism Industry was US\$ 118.5 million (or 7.2% of total investment) in year 2005, and is expected to reach US\$217 million, or 7.4% of the total investment in 2015 (USAID/SCOPE 2006). According to the World Tourism and Travel Council (WTTC), the contribution of travel and tourism in 2008 to Uganda's Gross Domestic Product (GDP) was US\$1,610 million (9.2 percent) compared to Kenya's US\$3,463.6 million (10.8 percent) (GoU-NDP 2010). The number of tourist arrivals increased from 512,000 in 2004 to 840,000 in 2008, an increase of 65 percent (UBOS 2010). Importantly, of these, 74 percent of the tourists arriving came from Africa followed by Europe (13%) and America (6%). The main sources of tourism revenue include entrance fees, camping fees, filming/photographic fees, nature walk fees, primate walk/tracking fees, fishing permit fees, research permit fees, concession income, lodging fees, and boat ride/launch fees. One of the strategies would be to review the national travel and tourism competitiveness plan for Uganda that was developed with support from United States Agency for International Development (USAID), identify and prioritize tourism development opportunities that are applicable to Murchison-Semliki Landscape. Under this plan, Geotourism was identified as a potential strategy to accelerate tourism development in the Albertine Rift region. Geotourism is defined as "...tourism that sustains or enhances the geographical character of a place – its environment, culture, aesthetics, heritage, and the well-being of its residents" (USAID/SCOPE 2006).

Under this financing mechanism, the proposed inventions in Murchison-Semliki Landscape are:

1. Explore the potential for setting up bird viewing points, coffee and gift shops along Mubende -Fort Portal – Bundibugyo road. The same should be done along the Fort Portal-Hoima road. The idea is to increase the visitor's period of stay in the region and generate extra tourist user revenues, including downstream benefits to the community. Biological information collected by WCS and JGI, in 1999-2001 (Plumptre and Cox 2005; Plumptre et al. 2007), and Makerere University Institute of Environment and Natural Resources

(MUIENR)'s long term monitoring biological species data available at its National Biodiversity Data Bank can be used to identify suitable areas for locating viewing sites, and nature walks.

2. The other strategy proposed in the national travel and tourism competitiveness plan for Uganda is to set up a sustainable tourism guarantee Fund, which would function to lower the cost of money borrowed to support tourism investment. Under such a fund, the investment itself could serve as collateral for the loan. This idea needs to be pursued by the Uganda Tourism Board in collaboration with the Association of Uganda Tour Operators (AUTO), Uganda Community Tourism Association (UCTOA) and other private companies interested in tourism investment. USAID could be a vital source of co-funding, particularly payment of upfront investment costs.

3.7 Conventional donor funding

Conventional funding, particularly bilateral donor agencies such as USAID, NORAD, and multilateral donors (e.g. UNDP-GEF, World Bank) are potential funding sources to support the development of market-based incentives. For example, donor agencies could be asked to support specific activities under the development of a REDD + project design document (PDD) and pilot carbon projects that could later benefit from carbon finance to ensure sustainable management and conservation of forest corridors. Private agricultural companies (e.g. BATU, tea companies) should be encouraged to approach donor agencies for financial support to develop agricultural-based enterprises that are compatible with biodiversity conservation in the forest corridors. For example, USAID through its Global Development Alliance (GDA), specifically Feed the Future Program is a potential source of funding for this particular intervention. Crops such as coffee and cocoa that can be grown under shade should be explored. International Food Policy Research Institute (IFPRI) is a credible source of information for selection of ecological suitable crops.

3.8 Domestic budget allocation

Government revenue allocations are an important source of financial and political support for protected areas, and environmental management in general. Under the decentralization policy, and the local government Act of 1997, district local governments are mandated to manage and conserve forests on public and private land. According to the Ministry of Water and Environment, the overall financial resources for the water and environment sector for the financial year (FY) 2009/10 was UGX318.1 billion comprising UGX 238.4 billion (75%) under the government budget and UGX 79.7 billion (25%) off-budget support. The national budget allocation for Water and Environment in the FY2009/10 was approximately 3.4% of the total national budget. The funding allocation for water and environment sector in the FY2010/11 is still low (i.e. 4.6 percent or UGX 223 billion of the total budget of UGX 54.2 trillion) compared to the level of investment needed to improve the sector. In the same budget, only two percent is allocated to trade, tourism and industry, and 6.7% for energy and mineral development. The Financial Year 2010/11 budget also marks the transition from the Poverty Eradication Action Plan (PEAP) to the newly launched National Development Plan (NDP) which lays out Uganda's strategic five-year development plan 2010/11-2014/15.

The Financial Year 2010/11 budget priorities seek to implement the goals of the NDP. The government provided detailed strategies under each objective for the environment and natural resources sector plan in the budget speech (<http://www.parliament.go.ug/images/stories/parliament/Budget%20Speech%202010.pdf>). For example, under objective one, the government proposes to restore forest cover from 3,604,176 hectares to 4,933,746 hectares country-wide by 2015. The strategy is to re-forest and afforest 1,266,000 ha in 698 forest reserves and 730,000 hectares in national parks and game reserves. This is to be achieved through the provision of incentives and facilitation to leaseholders, and private landholders to restore degraded areas in

protected reserves and plant trees on private land at a commercial scale. The government also intends to set up a credit transfer scheme for landholding above a defined tree density to support their investment, and develop landscape restoration action plans. The proposed plan to revamp the forest sector provides an opportunity for conservation organizations to advocate for a reasonable allocation of these funds and effort to the protection of forest corridors in Murchison-Semliki Landscape. Conservation organizations together with the district local government authorities will need to lobby the ministry of water and environment to allow district local governments retain at least 60 percent of the timber revenues and other forms of forest-related incomes (e.g. taxes, fines, and permitting fees) as conditional grants toward the management and conservation of Murchison-Semliki Landscape forest resources. At the moment, 40 percent of forestry revenue is retained at the district and 60 percent is remitted to the central government. The low royalties on forest products and very low penalties for illegal acts do little to discourage the over-exploitation of forest resources and lead to unsustainable forest management. The Forestry Support Sector Directorate (FSSD), National Forestry Authority (NFA), Uganda Wildlife Authority, Wetlands Management Department (WMD), and National Environment Management Agency will be critical to this initiative.

3.9 Indirect financing mechanisms and corridor conservation strategies

Indirect financing mechanisms include such activities or policy actions that do not necessarily function to generate revenue, but free resources for investment in conservation or reduce pressure on the exploitation of forest resources. Indirect financing mechanisms identified are:

3.9.1. Positive economic incentives

The government of Uganda can support forest corridor conservation through the provision of incentives (e.g. tax breaks) to agricultural companies, private land owners and forest owners that undertake biodiversity conservation. Some of the proposed incentives include

- Reduce the land surveying and registration fees to enable customary land, private and communal forest owners to register their land and transfer to freehold. An estimated cost of USD800 is way too expensive for farmers to afford.
- Free access to technical services in forest management, including the development of forest business management plans;
- Free access to forestry education resources;
- Provision of tree seedlings to farmers to plant trees on their own land;
- Waive income tax on carbon revenues earned under REDD+ initiatives in order to lower the opportunity cost once the scheme is implemented;

Apparently, the Ministry of Water and Environment, the government of Uganda is supporting NFA to raise tree seedlings for distribution to communities and individuals for planting country wide through the “Farm Incomes Enhancement and Forest Conservation Project” (FIEFCO). Another initiative that is being implemented by SPGS is a 5-year project named the Community Tree Planting Project targeting social institutions such as schools, churches, and hospitals with land available for tree planting. The government target is to raise over three million tree seedlings annually for distribution to farmers and planting on vulnerable sites. This target needs to be scaled-up to nearly 10 million tree seedlings in order to meet the growing public demand. In addition, MWE has initiated a process to create an enabling environment for forest financing and investments in Uganda through the development and implementation of a National Forest Financing Strategy. Some of the core strategies include 1) operationalization of a Tree Fund and mobilize

resources in partnership with all stakeholders; 2) establish a commercial and development credit in order to developing a medium to longer credit lines and financial services for the forestry sector; and 3) improve governance (inter and intra institutional dialogue) to restore the integrity of forestry institutions and strengthen the oversight function. These initiatives provide opportunities for public-private sector partnership toward supporting forest conservation in the corridor area.

2) Soil and Water conservation: Plantation agriculture companies can contribute to the conservation of the corridors by offering financial and technical support to farmers to practice soil and water conservation on their own farmland. This is being implemented through the agricultural inputs scheme, extension service, and agricultural research program aimed at developing high yielding, disease and drought resistant varieties. All these efforts need to be coordinated so that resources are put to maximum benefit.

3) Investment in tree planting, and commercial forest plantation establishment: Private companies are already contributing greatly to the provision of alternative sources of forest products such as fuelwood, poles and timber by supporting communities to plant trees on their own land. The provision of efficient energy stoves aimed at reducing fuelwood waste and consumption is also a valuable intervention that needs to be scaled-up. Similarly, the support by private companies to promote agroforestry practices (e.g. planting of multipurpose trees species that protect the soil, provide non-timber forest products, fodder and firewood, and are an important wildlife habitat) is very fundamental to the protection of forest corridors. The only challenge that needs to be addressed is the source of indigenous tree seedlings. At the moment, Forestry Resources Research Institute (FORRI) under the National Agriculture Research Organization (NARO), and NFA's Tree Seed Centre are unable to supply indigenous tree species for planting on a large scale. Indigenous tree species such as *Maesopsis eminii*, *Markhamia lutea*, *Albizia* and *Tectona grandis* (Teak) should become part of the tree nursery operator's investment priority. This is an initiative that donors such as European Union and NORAD could be willing to support.

4) Forestry-related livelihood enterprises: Private companies such as BATU are working with farmers to engage in bee keeping, fish farming, and fruit tree growing are important strategies to promote conservation in the landscape. Securing local people's livelihoods is critical to reducing conflicts over forest conservation. Income diversification helps to reduce the opportunity cost of allocating land to forest conservation, which is a serious impediment to successful REDD+ implementation in this part of the landscape where household asset base is heterogeneous. Support to farmers to create alternative income generating projects and ensure food security will be an essential component of the REDD+ scheme.

5) Project-level alliances/joint implementation of projects: Joint planning, budgeting and implementation of conservation projects are good strategies for raising support for the management of forests and water resources. The fact that most public, and private sector businesses depend on water, and forest resources, provides an opportunity for all stakeholders to pool resources for conservation. The creation of water management zones by the Directorate of Water Resources Management as a planning unit for conservation of water resources is an important framework to mobilize resources toward the management of the Albert catchment. WWF can facilitate the process of engaging all the stakeholders working in the Albert catchment area to incorporate forest corridors in the management action plans for the subwatersheds. Murchison–Semliki Landscape strategic action plan should also seek to harmonize the proposed interventions with those of the Albert catchment management plan to create synergies, and leverage for effective participation and contribution to the protection of water and forest resources. Private companies should be able to supplement donor-funded efforts through project-level alliances that provide in-kind support (e.g. transport, equipment, technical expertise) in order to achieve shared conservation goals.

6) Conservation education, and awareness raising support– Both public sector agencies and private sector companies are willing to support conservation education and awareness raising. For example, commercial

banks, and microfinance institutions are also willing to pay for the training of credit/loan officers in social and environmental impact assessment of proposed investments. The loan officers' capacity to appraise and manage business risks to the environment is a critical training need that conservationists could help address.

7) Conservation trust fund: Conservation Trust Funds (CTFs) is an important avenue for raising funds to support conservation. CTFs are private, legally independent grant-making institutions that provide sustainable financing for biodiversity conservation and often finance part of the long-term management costs of a country's protected area (PA) system (Conservation Finance Alliance 2008). They serve as an effective means for mobilizing large amounts of additional funding for biodiversity conservation from international donors, national governments and the private sector. CTFs are therefore deemed to be a transparent and efficient way to manage funding for conservation purposes. The trust funds can manage endowment funds (i.e. only investment income is spent), sinking funds (i.e. both capital and investment income is disbursed) or revolving funds (i.e. pass-through sources of revenues are disbursed), or a combination of the three mentioned above. The potential sources of funds for CTFs are donations, recurring income, surcharges, fines, fees, philanthropists and PES. This is a potential tool for consolidating funds from various income streams for conservation programs in Murchison–Semliki Landscape. One of the conservation trust fund objectives can be to finance land purchase in important sites in the corridor areas for biodiversity conservation.

3.9.2 Potential conservation interventions

1) Biogas technology: Biogas technology fits well in an agricultural system, especially in subsistence farming where cattle and poultry raising becomes an integral part of it. Animal dung is the primary input for biogas and it therefore encourages farmers to rear cattle and other animals. With a biogas plant, farmers are also more likely to stall feed their cattle to optimize dung collection. Stall feeding not only enhances the rate of regeneration of pasture and forest, but also makes more organic fertilizer available for improving texture and structure of soil along with its fertility. Kinyara Sugar Limited in partnership with the tea, and tobacco companies could explore this option to jointly invest in biogas technology. Slurry, which is a bi-product of biogas, provides numerous benefits to the companies because of its various uses such as basal manure, insecticide and pesticide, seed treatment to enhance germination, and resistance to diseases. Biogas can also motivate farmers to incorporate integrated farming system because of the feed value of the slurry for fish and piggery businesses.

2) Population control mechanisms: Human population increase is one of the underlying causes for forest loss in the entire country. This situation, however, is even worse in the Murchison–Semliki Landscape. The government can contribute to forest conservation by promoting family planning programs to slow down the population growth rate, and reduce forest resources consumption. There is a huge opportunity to incorporate family planning in the NAADS program, and microfinance lending requirements to the rural communities.

3.10 Potential Institutional framework

Huge potential exists to create or strengthen public-private partnership to tap into the emerging markets of ecosystem services gaining popularity worldwide. However, to adequately benefit from public-private sector financing opportunities, an institutional analysis needs to be made to make the right choice of institutional framework to deliver these benefits. From the public sector point of view, partnerships with private companies, and the communities help co-finance government programs through taxes, cost-sharing, domestic budget allocations, joint monitoring of programs, and promotes ownership of programs. From the private company point of view, ties with local communities provide social and political legitimacy that can serve as a hedge against potential threats such as resource destruction or land invasion. From the community perspective, linkages with private companies and organizations provide employment and the opportunity to

develop business planning and management skills that they lack. Once acquired, these skills become useful in setting up and managing community-based enterprises, and reduce natural resource-related conflicts. For example, efforts to support an increase in the supply of certified tropical forest products provide an excellent opportunity to capitalize on emerging markets that respond to consumer-driven demand for sustainably produced environmental goods and services. Equally, the production of green commodities and their demand by the public in the developed countries create opportunities for investment in forestry, agriculture, sustainable energy and fisheries. The main thrust is to link local producers (i.e. communities, organizations, and indigenous groups) who adopt sustainable management practices with private-sector industries seeking to expand into these growing international markets. Strategic partnerships leverage the technical and financial resources of the private sector while freeing resources for investment in conservation. Benefits of public-private sector partnerships cannot be overemphasized. Obviously, strategic partnerships also leverage the creativity of alliance partners and may prove to be cost effective in producing results that any one member working alone, could not achieve. It is therefore important that an institutional framework, which can help capture all the public-private sector forest financing opportunities, be carefully discussed and agreed upon by all key stakeholders.

The institutional set-up that can be further analyzed to select an appropriate institutional framework to deliver the different financing mechanisms identified is presented in **Table 3**. According to Parker and Cranford (2010) the institutional framework to be selected should consider the choice of institution, coherence of funding stream, decision-making, and centre of authority. First, **choice of institution** - a decision has to be made whether to select from, or reform an existing one, or create a completely new institution. It would be preferable to work with an existing institution(s) to avoid upfront costs of establishing one, and managing a new one. Second, **coherence of funding stream** - the level of coherence of revenue streams is a spectrum, ranging from a fully consolidated landscape-level fund at one end to a completely fragmented financial architecture most likely based on individual corridors or wildlife species at the other. A fully consolidated funding model would require all landscape-level ecosystem finance to be channeled through a single entity (e.g. a conservation trust fund, a commercial bank or microfinance organization). At the other end of the funding spectrum, a fragmented system would involve no aggregation of finance and recipients would face a multitude of discrete and uncoordinated funding streams. A decision has to be made whether to have a consolidated or fragmented funding stream. Third, **devolution** – this involves the choice of where and how decisions are made on the delivery of finance and who makes them. In general, spending decisions can either be made by recipients of finance (devolved) or by funding organizations (retained). Forth, **approval** - This criterion describes who will approve funding for project programmes and activities in landscape or defined corridor(s). There are two ways in which decisions related to the approval of funding can be made, that is, decision-making can either be centralised, under a governing body instituted by the financing parties or decentralised, whereby individual funding organizations or recipients make decisions on how finance is used.

Table 3 Proposed institutional set up based on potential sustainable financing mechanisms and opportunities for forest corridors conservation

Institutional set-up	Financing mechanisms								
	Conventional donor funding	Domestic budget allocation (taxes)	Tourism-based revenues (user fees)	PES Carbon trading/REDD+ (Carbon finance)	PES (Watershed services)	Compensation & biodiversity offset	CSR/CSI	Economic rent from extractive industries	Polluter pays
International transfer payments									
Multilateral donors	UNDP-GEF, World Bank			GEF adaptation fund, BioCarbon, & Prototype Carbon Funds					
International financial institutions				Kyoto Protocol (CDM projects), Voluntary Carbon markets, Adaptation Fund					
Bilateral mechanisms	USAID-GDA, NORAD			REDD+ projects					
International NGOs	Philanthropists								
Domestic transfer payments		Domestic budget, CBD Income Tax Act 1997			Water, and electricity tariffs annually fixed				
Private companies									
Energy companies (Oil & Gas)				Carbon offset	Demand for water is high	BBOP, EIA (NEMA)	CSR budgets, Corporate sponsorship	Royalties, capital gains tax levy	NEM Act 1995, Emission standards

Agricultural Plantation companies (tea, tobacco, and Sugar)		Income tax Act 1997		Certified emissions reductions	Depend on water for business, and willingness to pay is high	BBOP	CSR budgets Fair trade, Rainforest Alliance, Forest Stewardship Council		NEM Act 1995, Emission standards
Domestic Financial institutions (banks, microfinance institutions)				Carbon markets, Carbon finance delivery mechanism, creditors, East African bankers environment support competitions	Carbon markets, Carbon finance delivery mechanism, creditors	BBOP, Social & environment risk assessment, Equator Principles	CSR budgets, Corporate sponsorship funds, Fair trade		
Private/public		Water, & electricity billing system for cash mgt.	Joint ventures, Protected Area Entry fees, research fees, Business financing Plans	Land use plans, Land Act 1998 Economic incentives	Water, & electricity tariffs	Entry fees, ecotourism charges	Private landowners willing to plant trees	Resource user fees	Consumer tax on fossil fuels (polluter pays principle)

The following critical issues need to be addressed in order to achieve a smooth implementation of the forest corridor management objectives:

1. Land titling, and tree tenure;
2. Identify an adequate institutional framework on how to generate, and deliver finance for biodiversity and ecosystem services, and govern and coordinate corridor management activities. At least key stakeholders should be involved in the process to foster ownership, and avoid conflicts that may arise during implementation;
3. Completion of the Murchison–Semliki Landscape Strategic Action Plan;
4. Conduct a landscape-level financial analysis (e.g. system level financial gap assessment, financial and administrative processes assessment, formulation of sustainable financing plan);
5. Identify an appropriate finance delivery mechanism (i.e. performance-based, program/activity-based, level of revenue delivery, and obligations), and develop a transparent accounting systems;
6. Establish appropriate financing mechanisms
7. Develop a monitoring and evaluation plan for the public-private partnership financing program;
8. Develop a communication strategy.

4.0 Conclusions and recommendations

In summary, the current levels of financing for sustainable conservation programs are inadequate to reduce the increasingly harmful environmental impacts of today's developments, particularly forest loss to agricultural expansion, and fuelwood energy demands. Public-Private sector partnerships are necessary to catalyze sustainable financing mechanisms for conservation. New approaches to raising finances for conservation emerged at the time when donor agencies, academics, and conservation organizations unanimously agree that conventional markets cannot sustain the flow of ecosystem goods and services. Worldwide, a growing number of governments have recognized the economic and environmental benefits of reducing development impacts on ecosystem services provisioning. Policy reforms and institutional adjustments are being made by national governments to facilitate the launch of new innovative conservation financing mechanisms. The following were identified as feasible mechanisms for public – private sector companies to finance forest corridors conservation in the Murchison–Semliki Landscape:

Direct financing mechanisms identified included:

- 1) **Payment for Ecosystem Services (PES) – Private Sector:** Key sources of finances include the Forest carbon finance generated through tree planting projects and REDD initiatives. The net revenues from avoided deforestation are projected to reach 78 million United States Dollars (5 USD/tCO₂e) on average per year for the first 14 years and a maximum of 153 million USD over the rest of the project life time. Opportunities for REDD + to work include presence of private forest owners with relatively high stocked tropical forests, a National REDD – PP draft, voluntary carbon markets and the Kyoto Protocol. Private companies such as Kinyara Sugar Limited and BATU are willing to reduce their carbon footprint (**Carbon offset**) by planting trees, investing in renewable energy production (e.g. bagasse) and development of energy-efficient technologies.

- 2) **Payment for water and watershed services – Private sector:** Payment for water and watershed services from rivers Wambabya, Nkusi, and Waki by downstream users such as Hydromax Limited, tea companies, and Oil and Gas exploration companies is a potential source of finances for the protection of riverine corridor areas. DWRM has established four Water Management Zones in Uganda designated by catchment areas, a framework that could help raise public-private sector support, and financing for the management of watersheds in the Albert catchment area. Under this financing mechanism, the public sector could also help raise money from statutory license and permit fees and lobby government to make adjustments in the retail water consumer tariffs to include a fee for watershed protection.
3. **Compensation and Biodiversity offset scheme –** Oil and Gas companies, specifically Tullow Oil is potentially willing to finance corridor conservation activities in the Murchison–Semliki Landscape to offset its environmental damages resulting from their drilling activities inside Kabwoya Wildlife Reserve, and Murchison Falls National Park. Banks can also be encouraged to adopt the biodiversity offset mechanism as a lending standard for good business practice to reduce the environmental impacts resulting from the activities of their clients. Opportunities for this mechanism to work include the environmental Sensitivity Atlas for the Albertine Graben, the National Environment Act of 1995 that require developers to conduct an Environment Impact Assessment (EIA) and mitigate risks to the environment and humans. The social and environmental risk assessment can be further strengthened if banks agree to adopt the Equator Principles, and receive more training from conservationists.
4. **Tourism-based revenues – Public sector:** Tourism user fees from Murchison Falls National Park, Kabwoya and Semliki Wildlife Reserves and Budongo Forest Reserve is a potential source of finance mainly from the Revenue Sharing scheme managed by Uganda Wildlife Authority. Private sector companies such as Kinyara Sugar Limited, McLeod Russel Uganda Limited with investment interests in tourism, including hotels, can help to generate finances to support conservation. The availability of a National Travel and Tourism Competitiveness Plan for Uganda developed with support from USAID, and the availability of biological data from WCS/JGI, and the National Biological Databank at Makerere University Institute of Environment and Natural Resources present an opportunity to identify potential sites for bird viewing, nature walks in Bugoma Forest Reserves, and establishment of coffee and craft shops along Mubende – Fort Portal road and the Fort Portal-Hoima road for tourists.
5. **Corporate Social Responsibility – Private sector:** **Corporate Social Responsibility (CSR) is one of the** strategies that private business companies use to address the environmental and distributional conflicts associated with their businesses. Private companies surveyed are willing to finance tree planting, and restoration programs in the landscape. Private companies should be encouraged to set up corporate awards and endorsements as a complementary strategy to CSR. These grants can be extended to community based organizations, forest owners associations, and vulnerable groups to stimulate and support activities that drive ecosystem improvement, nature conservation and sustainable use of natural resources. For example, private companies can be encouraged to select corridors of their choice, and help to fundraise for their conservation. This can be organized in form of corporate business competition challenge that can be held annually.
6. **Conventional donor funding** from multilateral donors such as UNDP-GEF, and World Bank can support the establishment of REDD+ initiatives, particularly support the process of developing the REDD Project Design Document (PDD), while bilateral donors such as USAID's Global Development Alliance (GDA) support private companies to develop eco-agriculture projects under Feed the Future program to mitigate food insecurity and create habitats for biodiversity, development of biogas technology for tobacco, tea and sugarcane farmers, climate adaptation programs, and NORAD could finance tree planting, and restoration projects, including commercial forest plantations under the Sawlog Production Grant Scheme (SPGS).

7. **Domestic budget allocations – Public Sector financing:** Government revenues collected in the form of taxes, license and permit fees is a potential source of revenue to finance the management of forests in the landscape. Government revenues can be earmarked for implementation of conservation programs in the landscape. The opportunities for this financing mechanism to be realized are the National Development Plan (2010/11-2014/15), which recognizes the economic contribution of the forestry sector, and tourism industry to national development. The government of Uganda is required to work towards achieving environmental sustainability – goal No.7 of the Millennium Development Goals (MDGs), and biodiversity forms the foundation of the vast array of ecosystem services that support human-well being. Also, Uganda is a signatory to various international environmental conventions, particularly the Convention on Biological Diversity (CBD).
8. **Capture of economic rent - private sector:** Payment of resource user fee, surcharges, and fines from extractive industries (e.g. timber, minerals, and oil and Gas companies) is a potential source of revenue to finance corridor conservation. The other mechanism is the **polluter pays principle application** targeting mainly agricultural companies (tea, tobacco, Sugar, and agro-processing), Oil and Gas, and automobile garages. Revenue collected from pollution permits and fines collected for violation of pollution standards can be earmarked for financing ecosystem restoration interventions.

Indirect financing mechanisms include the development of economic incentives for private landowners to plant trees, and forest owners to keep their land under forests. The economic incentives could be in form of subsidies or conservation easements such as free access to technical knowledge in forest business planning and management. The government of Uganda through the Farm Income Enhancement and Forest Conservation (FIEFCO), and Community Tree Planting Project provide free seedlings, to private landowners to plant trees.

Other conservation strategies include promotion of **Soil and water conservation, and agroforestry practices** by private agricultural companies focusing on communities where they work, promotion of **forest-related enterprises** (e.g. bee keeping, and fruit growing, aquaculture) by private companies, and development of project-level alliances by private companies to supplement donor-funded programmes. The legal framework for implementing project-level alliances do exist and huge opportunity for partners to influence long term conservation planning. For example, protected area management plans for national parks and wildlife reserves, and the National Forest Plan are currently being reviewed to make them consistent with the national development objectives. The review process provides an opportunity for conservation conservations to highlight the importance of corridors in wildlife conservation.

Conservation mechanisms: Private sector: Set up a **conservation trust fund** to help raise finance for biodiversity conservation. This strategy will be very critical to the option of purchasing land in the corridor areas. Biogas technology development is another strategy that can help reduce forest loss by providing biogas plants to tobacco, and tea farmers. Lastly, biogas technology adoption, and population control will be very critical interventions to reduce the consumption of forest resources.

Recommendations

In order to ensure that the identified sustainable financing mechanisms are efficiently captured and planned for, the following recommendations are made.

1. Conduct individuals meetings with special interest groups such as BATU, and Tea companies followed by a general workshop for all decision makers in potential financing organizations to get them thinking about the opportunities to participate, and contribute to forest corridor conservation. The Albertine Rift Forest Carbon Group, an informal network for conservation organizations working in the region provides a great opportunity to mobilize, coordinate and implement the sensitization activities;
2. Hold talks representatives of donor agencies (e.g. UNDP-GEF, USAID, NORAD, World Bank) to highlight the importance of Murchison – Semliki landscape forest corridors, and the need for funding. Proposed activities for funding could include the PDD for REDD, alternative livelihood projects (e.g. bee keeping, ecotourism), sustainable agriculture focusing on shaded coffee and Cocoa, biogas development, and support the development of business plans for protected areas;
3. Prioritize the corridors and associated management actions based on objective criteria such as cost and availability of funds, species, ecosystem services, and institutional capacity. In addition, develop corridor action plans. Inventory all players relevant to each corridor, their on-going activities, and identify interventions that may require new players or joint implementation.
4. Work with private land, and forest owners associations to implement, land registration and titling, tree planting and agro-forestry programs;
5. Work with “set-to-go” companies such as banks, and agricultural companies with committed funds to undertake tree planting, restoration, and enterprise development;
6. Private companies should be encouraged to establish corporate awards and endorsements as a complementary strategy to CSR. These grants can be extended to community based organizations, forest owners associations, and vulnerable groups to stimulate and support activities that drive ecosystem improvement, nature conservation and sustainable use of natural resources.

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Appendix 1 Scope of Work

The UNDP-GEF Albertine Rift Project, implemented by WWF Uganda is designed to support conservation of forest reserves and forest on private land in the northern Albertine Rift region of Uganda. Four main objectives were defined for this project. Wildlife Conservation Society (WCS) has been sub-contracted to undertake activities focused on conservation and restoration of wildlife corridors in the Murchison Falls-Semliki landscape with the following project outputs:

- a) Sustainable financing mechanisms identified and promoted
- b) M and E frameworks for the Albertine Rift PA system developed
- c) Biodiversity and forest resources in the CFRs inventoried
- d) Northern biodiversity corridor assessed

This assignment deals with developing Sustainable Financing Mechanisms (Output a) above).

In the light of the above, there is need to identify and generate long-term conservation financing to fund management activities in the forest landscape of the northern Albertine Rift. Incentives would provide landowners with the opportunity to earn money from restoring and conserving private forest patches rather than engaging in unsustainable forestry and farming practices. The challenge is to find the appropriate mechanisms to generate the resources necessary to ensure the adequacy of these incentive payments.

Objectives and Approach

The objective of the assignment is to gather data and provide inputs relevant for the identification of suitable financing mechanisms for protection of forest corridors in the northern Albertine Rift. WCS intends to examine several potential initiatives involving both private sector companies (oil industry, commercial growers – tea, sugarcane, tobacco; financial industry, timber companies) and public sector (municipalities, utility companies, communities). Some of the potential strategies/approaches include: biodiversity offsets, payments for ecosystem services (outside of carbon finance), tourism development, and developing a policy of incentives at the level of government such as tax breaks for conserving forests.

Stakeholder Analysis will be performed to analyze both dependence and impact on resources of key players, primarily of private sector and municipalities. This exercise should focus on documenting conservation plans of private sector companies in the area, and the associated investments.

The assignment shall recommend the most prospective interventions and provide necessary analyses and justifications for its recommendations.

The consultant will be responsible for undertaking the assignment and must liaise frequently with WCS and its programme partners. The Consultant will report directly to the WCS Albertine Rift Director based in Kampala and will work closely with the Programme Manager WCS-WILD and WCS Programme Manager responsible for the UNDP-GEF-WWF sub-contract as appropriate throughout the process. The following specific tasks are to be undertaken:

Field Data Collection and Analysis: Compile information relevant to potential financing interventions (biodiversity offsets, PES, etc.) from various stakeholders (mostly private sector and municipalities as listed earlier). The task will include identification of the most important companies/organizations and establishing contacts with them. Data collection will take primarily in the field.

Assistance in Preparing the Financing Report: Based on the research, the Consultant will incorporate his findings from the field research into a final financing strategies report to be completed by December 18, 2010 together with other WCS staff.

Deliverables:

The Consultant is expected to provide a report which will include the following deliverables:

Identification of major businesses and key contacts whose operations affect land use in potential “corridor areas” (mostly commercial growers, financial services institutions).

Document each company’s environmental policies, plans, and investments.

Synthesize the findings into assessment of impacts and strategies by industry and region (e.g. analysis for each section of the northern Albertine Rift landscape).

Together with WCS’s GIS Specialist, develop a visual map of the region highlighting the major drivers of deforestation.

Assess the interest of each company in investing in the conservation of the corridors as an offset or to ensure a regular supply of an ecosystem service

Duration and Compensation:

This assignment is expected to last 15 days (non-consecutive). Approximately 10 days is expected for preparation and actual field data collection, and 5 days for data processing and report writing.

Appendix 2. Description of the public private sector companies

British American Tobacco Uganda

BATU is classified as an operating company, which means that it is mainly a tobacco-growing and leaf-production company. Its activities are spread through four leaf-growing regions: West Nile, Bunyoro-Mubende, North Kigezi-Rukungiri and Lira/Middle North. BATU is therefore a significant and important feature of Uganda's economic landscape. It directly or indirectly affects the lives of half a million people, including employees, farmers, customers and suppliers. It exerts immense influence on the economy by purchasing tobacco from over 60, 000 contract farmers, other inputs from 200 more suppliers, paying taxes and selling tobacco locally and internationally (BATU, 2003). All tobacco farmers have an account with BAT. Inputs are provided and debited from the accounts. Likewise, when the crop is harvested, the account is credited until the loan is paid off, thereafter farmers receive cash for the additional tobacco sold. Each year, the company announces pre-season prices for the different grades of tobacco leaf. If farmers are interested, they enter into a one-year agreement with BATU under which BATU commits itself to provide inputs and the farmer must sell his or her tobacco to BATU. This arrangement was developed in 1997 following the tobacco production challenges, which resulted in the enactment of an amendment to the Tobacco Law to safeguard both the farmer and the companies entering into credit agreements. Basically, it commits the farmer to selling to the company which it has an agreement with, and commits the company to purchase all tobacco from that farmer. All inputs are supplied, including tools such as hand hoes. The amount of inputs supplied is restricted in value to roughly 30% of the farmer's expected crop sales. Technical advice is provided through the extension staff with the aid of demonstration plots and 'master' farmers throughout the production areas to demonstrate correct cultivation practices and the potential gains after signing a production agreement with BATU.

BATU, however, recognizes a number of obstacles that constrain its effort toward the achievement of its environmental plans namely: 1) low political support especially from the centre; 2) inadequate knowledge on how to improve yields from non fuelwood cured tobacco varieties; 3) time for farmers attitudes to change is reasonably long; 4) rigidity in NFA policy regarding trees species recommended for planting on leased public land. According to BATU, NFA promotes eucalyptus and pines as the only commercially viable trees species for planting in degraded forest reserves, and places low value on indigenous tree species; 5) low compliance of competing tobacco companies in the tobacco industry to national laws and regulations.

Uganda Tobacco Services Ltd

Other players in the tobacco industry include **Uganda Tobacco Services Limited** formerly Uganda Leaf Tobacco Limited a subsidiary of multinational company Universal Leaf Tobacco Company, Inc. (see <http://www.universalcorp.com/AboutUs/AboutUs-History.asp>) an America-based company. The proprietors of Uganda Tobacco Services Ltd, are the former employees of Universal Leaf Tobacco Company, and are less than six months in business here in Uganda. Uganda Tobacco services Ltd operates in areas where Uganda Leaf Tobacco Ltd used to operate in the districts of Mubende, Kibaale, Kyenjonjo, and Kamwenge, and only Masindi and Hoima were dropped. In Kibaale, their activities are concentrated in Mugarama, Kiryanga, Kyebando, and Mabbale subcounties, however, they have plans to expand to Kakumiro. Uganda Tobacco Services Ltd specializes in dark fire cured, burley and flue-cured tobacco varieties. Flue cured and dark fire cured tobacco varieties are known to demand a lot of wood, which is a major challenge to tobacco farmers. The company contracts farmers depending on the quantity demanded

by the international buyers. For example, this growing season, the company is working with 2000 farmers and each farmer is expected to supply at least 500 kilograms of cured tobacco grown on one acre of land. Farmers are provided with inputs especially agrochemicals, and seeds. The company also offers extension services to its farmers to ensure good farming practices.

Continental Tobacco (U) Ltd

Continental Tobacco (U) Ltd is a company owned by Kenyans. The company operates mainly in Kibaale but lacks physical offices in the region. Efforts to secure an appointment with the company representatives were made, but it didn't mature within the study timeframe.

Conservation policies and plans of tobacco companies

Despite its economic contribution to the country, tobacco production, like other monocultures affect the ecosystems where they are produced. Globally, an estimated 200,000 ha of forests and woodlands are removed by tobacco farming each year (Geist 1998). First, the choice of variety to produce has direct implications on ecosystem resources. In this region, dark fire-cured (smoke) and air-cured burley are the main tobacco varieties grown, while Virginia variety (flue-cured) also known as bright tobacco is common in west Nile, and mid north of Uganda. Flue-cured tobacco is dried in a closed building with furnace driven heat directed from flues or pipes that extend from a furnace into the barn. Dark fire-cured, and Flue (heat) cured tobacco varieties, both consume large quantities of biomass to cure the leaves (Sejjaaka 2004). On the other hand, Burley which is air cured, requires poles to construct tobacco barns. Air-cured tobacco is traditionally cured by hanging in structures with a roof, but with open sides to allow air to freely circulate. Growing of dark fire-cured and flue-cured tobacco varieties promote forest loss, while burley promotes forest degradation due to selective harvesting of trees to provide poles for barn construction. The other tobacco variety, which is not grown Uganda, is sun-cured tobacco. Tobacco leaves are exposed to the sun to remove most of their moisture before being air-cured to complete the process. Of all sun-cured tobaccos, the best known are the so-called Oriental tobacco of Turkey and Greece. This particular variety is labour intensive to harvest, hence most manufacturers are reluctant to promote it. Mangora (2005) who examined the ecological impact of tobacco farming in Miombo woodlands of Urambo District (Tanzania), a leading producer of flue-cured tobacco reported that 14.7% (42,738 ha) of land is cleared annually for tobacco planting, which accounts for 3.5% of annual deforestation in the district. Meanwhile, a farmer requires averagely 23 m³ of stacked wood for curing tobacco per season accounting for 3% of additional deforestation. Second, the choice about how much area to cultivate and the location of such land in the landscape, adversely affects the flow of ecological services. In 2008, farmers reported that tobacco growing is allocated a different plot each season at least on a newly cleared forest (WCS 2008). The decision to site the following tobacco garden depends on availability of land, its proximity and affordability in case of renting.

The conservation policies and practices of at least two tobacco companies that accepted to participate in this survey, that is, BATU, and Uganda Tobacco Services Limited are presented below.

British American Tobacco (BAT) conservation plans

The British American Tobacco Biodiversity Partnership was launched in 2000 and consists of three conservation NGOs namely Earthwatch Institute, Fauna and Flora International, and Tropical Biology Association (<http://www.batbiodiversity.org/>). This is a global initiative that seeks to control and reduce its impacts via the '3 Rs' principle: Reduce, Recover, and Recycle. The three conservation organizations mentioned above are the conservation technical wing that is expected to help BAT build strong biodiversity conservation principles within its businesses worldwide. The BAT Biodiversity Partnership Group is guided

by the objectives of the Convention on Biological Diversity (CBD), and the Millenium Ecosystem Assessment target 9 (www.un.org/millenniumgoals/). The BAT Biodiversity Partnernship Program objectives are to i) ensure that their business complies with all international and local biodiversity laws; ii) Understand the impacts of BAT activities on biodiversity, and other ecosystem services; iii) engage with stakeholders such as farmers and conservation organizations to promote biodiversity conservation, and sustainability of ecosystem services where they work; and iv) develop action plans to avoid, minimize, mitigate or offset tobacco production impacts on biodiversity. In 2006, BAT committed one million pounds per year over a period of five years to fund the biodiversity partnership activities. Half of the funding and activities is to focus on understanding and managing the impact of its own operations on biodiversity while the other half is meant to support external biodiversity conservation projects through its partner NGOs.

Other global initiatives include a reduction of BAT carbon footprint through optimal curing efficiency and sustainable use of wood. In 2006, BAT analyzed the potential risks to business that could stem from changes in climate change over the next 20 years, with the help of the environmental consultancy firm Environmental Resources Management (ERM). The results of the study revealed the need for BAT to reduce its negative impacts on the environment mainly habitat loss, carbon foot print and watershed contamination. This analysis, however, concentrated on leaf operations, factories, materials supply, business travel and freight. None the less, BAT embarked on an ambitious plan to reduce its own carbon footprint. In 2000, BAT set up a long term global target to reduce carbon emissions from its operations by 50% by 2030 and 80% by 2050. According to information available on its official website (<http://www.batbiodiversity.org/>), BAT estimates that 60 million trees were planted between 2007 and 2009 through their programmes alone, accounting for 0.52 million tons of carbon dioxide sequestered. This is more than a third of the carbon dioxide produced in 2009 from leaf curing by their contracted farmers, and indicates that there is considerably more absorption by all the surviving trees planted through their agro-forestry programme. BAT is also seeking to reduce and control its water consumption, including management of environmental impacts of poor water disposal by developing and implementing environmental management systems at the tobacco factories. Worldwide, the company is investing in research and design of energy efficient technologies, and production processes that could help reduce, reuse and recycle waste.

At the country business level, BATU has been supporting its farmers and national conservation organizations to reduce its environmental effects on the environment. As part of its global BAT biodiversity partnership program, BATU launched and implemented a short term project (February 2008 to December 2009) titled “Regeneration of native forests in Uganda.” Tropical Biology Association (TBA) as the lead agency, and Nature Harness Initiatives, a Uganda National NGO were responsible for the implementation of the project. The purpose of the project was to address the issue of native forest degradation through restoration, management, and mitigation of BAT (U) operational impacts. The main objectives were to: 1) produce a set of detailed local maps of land use and forest cover in the areas in which BAT Uganda operates; 2) enhance forest ecosystem services through regeneration, management and mitigation; and 3) promote environmental education and awareness raising. A number of project reports were produced (e.g. agricultural aerial survey in BATU operational areas, and the BATU opportunities and risk assessment reports). In addition, a five year BATU biodiversity mitigation plan was to be developed. A request made by WCS to access these reports is yet to be granted by BAT management.

Importantly, the results of this project have enabled the development and implementation of several interventions namely: 1) leasing of NFA land for forest regeneration and mitigation through sustainable management with specific reference to high biodiversity value forests, connectivity, and delivery of ecosystem services in Hoima district; 2) afforestation (mainly eucalyptus species) to ensure sustainable sources of fuelwood by the BATU tobacco farmers. Efforts to promote planting of indigenous

species such as *Markhamia lutea*, *Maesopsis*, and *Albizia* species are also underway. In 2008, British American Tobacco Uganda (BATU) was reported in the Monitor, a local daily Newspaper to have offered over UGX 300 million to tobacco farmers for afforestation and biodiversity investments to fight environmental degradation and global warming in West Nile tobacco growing areas (Wafula 2008). In the same year, BATU reported planting over 500,000 trees, including fruit trees in different places and sites (e.g. plantation boundaries, farmers landholdings, and public amenities). BATU has developed agreements with farmers to engage in sustainable agriculture, including a requirement that each registered tobacco farmer plants at least 200 trees on his or her land; 3) BATU in partnership with Nature Harness Initiatives (NAHI) is mobilizing local communities toward the management of forests, and develop forest-based economic enterprises to provide additional benefits to local communities. Enterprises such as fruits growing and beekeeping are under implementation by local communities in Bujawe and Nyakabingo in Hoima district. In Bunyoro alone, BATU is working with 15000 contract tobacco farmers to implement some of these forest-based enterprises. BATU is also piloting the establishment of live barns to reduce pole harvesting and enable farmers to access fuelwood on their own farm. Currently, 391 live barns have been constructed in Kigezi with support from BATU, and NAHI. In addition, forest restoration activities in Wambabya Forest block (1260 ha) using indigenous tree species such as Albizia is on-going. BATU is also involved in promoting environmental education, and public awareness raising through posters, radio talk shows, and printing of t-shirts with environmental messages as part of its corporate social responsibility.

With respect to freshwater conservation and watershed degradation, BATU/TBA has been working with a local freshwater biologist and its local partner NGO, Nature Harness Initiatives (NAHI) to improve freshwater management by implementing a holistic programme of work to restore and conserve riparian habitats in Hoima. BATU has supported 109 farmers (BAT Uganda farmers and the local community) to plant nearly 15,000 indigenous trees in degraded river bank buffer areas in Hoima, equivalent to 58 hectares. As part of its environmental education and awareness raising, BATU has setup 24-one hectare demonstration plots to provide learning lessons for maintaining riparian buffer habitats between cultivated land and river banks. The demonstration fields are complimented by the distribution of conservation awareness messages to its 30,000 contract farmers (including farmers in West Nile region) as inserts on the pages of farmer passbooks. Under its corporate social responsibility programme, BATU provides its farmers with training and technical support. The programme includes good agricultural practices, which combine viable tobacco production with positive environmental management, soil and water conservation, appropriate use of agrochemicals, child labour eradication, and occupational health and safety standards in tobacco leaf processing.

Conservation plans of Uganda Tobacco Services Ltd

Uganda Tobacco Services Ltd signs contracts with its farmers on a yearly basis like BATU. The contract agreement requires that a farmer has to plant at least 50 trees per year of mainly eucalyptus for construction of tobacco barns, and *Ficus natalensis* for curing tobacco. They are encouraging farmers to carry out soil and water conservation through construction of contour ridges along the hills where they operate. The company also provides tree seedlings to potential farmers, churches and schools to plant trees as part of its commitment to community development. Unfortunately, the company's conservation initiatives are undermined by purchasing tobacco from 'business farmers' – farmers operating without contract agreements, and likely to grow tobacco inside protected areas.

B. Tea companies

Brief history of the tea industry in Uganda

Tea was introduced in Uganda in the 1900 and became a very important cash crop in the late 1940s under the European and Asian stewardship. Tea is grown along the Lake Victoria Crescent and in the central Albertine Rift on the slopes of the Rwenzori Mountains, around Fort Portal and around Kalinzu-Maramagambo Tropical High Forests due to the favorable climate, and soil conditions. In the 1970s, however, tea production almost ceased when the government of Uganda under President Idi Amin expelled many tea estate owners who were mainly Asians. Many Ugandan tea farmers also reduced production as a result of the civil unrest and economic upheaval. Successive governments after Amin encouraged owners of tea estates to intensify the cultivation of existing tea gardens. Mitchell Cotts, a firm from Britain returned to Uganda in the early 1980s and formed the Toro and Mityana Tea Company (TAMTECO) in a joint venture with the government. Tea production subsequently increased from 1,700 tons of tea produced in 1981 to 5,600 tons in 1985. The yields, however, did not approach the high of 22,000 tons that had been produced in the peak year of 1974 and they continued to decline slightly after 1985. In an effort to expand tea production and reduce the nation's traditional dependence on coffee exports, the government doubled producer prices to UGX 20 per kilogram in 1988, but tea production remained below capacity. Only about one-tenth of the 21,000 hectares under tea cultivation were fully productive in 1989 contributing about 4,600 tons of tea. Of this, 90 percent of the made tea was exported to earn foreign revenue.

In 1988 and 1989, the government used slightly more than 10 percent of the total production to meet Uganda's commitments in barter exchanges with other countries. During this period, two companies, TAMTECO and the Uganda Tea Corporation (a joint venture between the government and the Mehta family) managed most tea production. By 1990, TAMTECO owned three large plantations with a total of 2,300 hectares of land, but only about one-half of TAMTECO's land was fully productive. The Uganda Tea Corporation had about 900 hectares in production and was expanding its landholdings in 1989. The state-owned Agricultural Enterprises Limited managed about 3,000 hectares of tea, and an additional 9,000 hectares were farmed by about 11,000 smallholder farmers, who marketed their produce through the parastatal Uganda Tea Growers' Corporation (UTGC). Several thousand hectares of tea estates remained in a "disputed" category because their owners had been forced to abandon them. In 1990, many of these estates were being sold to private individuals by the departed Asians' Property Custodian Board as part of an effort to rehabilitate the industry and improve local management practices. After the sale, the tea harvest rose to 6,900 tons, of which 4,700 were exported and generated US\$3.6 million. The following year, the government increased its production target to 10,000 tons to meet the rising market demand for tea.

The European Economic Commission (EEC) and the World Bank provided assistance to rehabilitate the smallholder segment of the industry, and the UTGC rehabilitated seven tea factories with assistance from the Netherlands. Both TAMTECO and the Uganda Tea Corporation were among the tea growers in Africa who took a leading role in mechanization of tea production. Both companies purchased tea harvesters from Australian manufacturers financed in part by the Uganda Development Bank, but mechanized harvesting and processing of tea was still slowed by shortages of operating capital. Uganda was second only to Kenya as Africa's largest producer of tea, exporting US\$17.06 million worth of tea in 1996 and \$39 million by 1998. At the moment, approximately 200,000 hectares are under tea farming (Biryahwaho and Kalanzi 2009). Currently, the tea industry faces another set of constraints to achieve full tea production potential. Declines in soil fertility, low availability of land for expansion, scarcity of fuel wood, and unpredictable rainfall patterns have reduced tea production and the ability of farmers to generate reasonable economic returns. Most agricultural researches carried out at national research

stations in the country are dominated by research on conventional food crops, and other cash crops, with no research on tea. The only tea research station in the country located at Rwebitaba in Kyenjonjo district is yet to be revived.

McLeod Russel Uganda Limited

McLeod Russel Uganda Limited (MRUL) is a Mcleod's subsidiary Borelli Tea Holdings Ltd, a Calcutta-based tea plantation major Mcleod Russel India Ltd, which acquired the Uganda business of UK-based James Finlay International Holdings Ltd. MRUL is part of the Williamson Magor group which was incorporated in 1869. Mcleod Russel Uganda Limited owns six tea estates namely: Ankole (Bushenyi), Mwenge (Kyenjonjo), Kiko (Kabarole), Muzizi (Kibaale), Kisaru, and Bugambe (both located in Hoima). In 2001, James Finlay (Uganda) Ltd acquired these tea estates from Rwenzori Highlands Tea Co Ltd, which in 1994, bought the same business from Agricultural Enterprise Limited, a partner of Commonwealth Development Corporation (CDC). **Table 1** provides the company's land allocation by estate, and estimated crop yield for 2010. Mwenge is the largest tea estate followed by Bugambe and Kiko is the least. The company is proud to maintain 1765 hectare (26.3%) of land under natural forest and nearly 15 percent (999 ha) under eucalyptus plantations. At an average yield of 3700 kg/ha, the 2010 estimated crop in tonnes is 17,966 of green leaf, equivalent to 15 million kilograms of made tea.

Table 1 Land allocation by tea estate, and estimated crop yield for 2010

Estate	Area under Tea (ha)	Area under Eucalyptus plantation (ha)	infrastructure Area (ha)	Area for tea extension (ha)	Area for eucalyptus extension (ha)	Natural Forest (ha)	Total Area (ha)	Est. Crop 2010 (tons)
Ankole	573	227	69	0	0	315	1184	4185
Kiko	271	45	22	0	0	120	458	1509
Mwenge	957	306	79	176	0	762	2280	4243
Muzizi	366	92	45	0	0	104	607	1579
Kisaru	333	71	19	114	0	73	610	1437
Bugambe	793	258	66	24	41	391	1573	5013
Total	3,293	999	300	314	41	1765	6712	17966
Proportion of total area (%)	49.1	14.9	4.5	4.7	0.6	26.3	100	

Yield (kg/ha) is 3700; estimated total production (15 million Kg of made tea); Source: Company

Environmental impacts of tea growing

The main harmful environmental impact of tea production is habitat conversion. This is especially true because much of the land used for tea farming is often located in highland areas with favorable rainfall, and relatively fertile soils, which are known to be rich in biodiversity. Conversion of natural habitat to tea production has multiple effects. Tea farming contributes to forest cover loss resulting in less biodiverse landscapes of monocrop. Intensive use of chemical inputs reduces soil biodiversity, and promotes soil degradation. Studies in India have shown that as much as 70% of soil biota has been lost on tea plantations compared to the nearby natural habitat, especially in areas that are heavily worked by human and machinery pass over (Senapati et al. 2002). Furthermore, changes in the soil physical structure due to poor tillage practices (e.g. maximum tillage), cause chemical property degradation such as reduced cation exchange, reduced water absorption and retention capacity, and nutrient leaching. High concentrations of aluminum, and accumulation of natural toxins from tea leaves has also been noted to increase acidity of the soil (i.e. pH of 3.8), which alters soil microorganism communities (Senapati et al. 2002). Tea shambas with poor cover expose the soils to erosion. Eroded soils and sediments deposited in streams and reservoirs reduce hydropower generation, block drainage channels, and cause road damage resulting in huge economic losses to tea growing countries. As the soils get degraded, farmers rely on inorganic fertilizers such as Nitrogen Phosphorus, and Potassium (NPK), and Single Super Phosphate (SSP) to replenish the lost soil nutrients and maintain productivity. In Uganda, the agronomic practice involves applying sixteen 50 kilogram bags of NPK/ha/yr (in the ratio of 25:5:5) either as a single application or split-season application.

Wood is a valuable component of the tea processing activities because it is the main source of energy. Burning of wood contributes to gas emissions resulting in air pollution, and global warming. At the moment, no study has been conducted to assess the quantities of gases emitted by the tea companies in Uganda. This is a potential area of research for conservation organizations to make a case for carbon foot print reduction. Most tea companies talked to are making serious efforts to address the impacts of their activities on the environment, and these measures are discussed in more detail in the next section. For example, some tea companies have reduced fuelwood consumption in tea processing from 380 kg of made tea/m³ of wood to 583 kilograms of made tea/m³ of wood (Byamukama Biryahwaho and Kalanzi 2009). Tea companies used to have a ratio of 1:3 (i.e. eucalyptus vs. tea acreage on plantations). Now it is 1:5 for some tea companies and 1:6 for other due to better technologies. Tea production generates reasonably high waste in the process of making tea. Tea waste is the main by-product of tea processing. Sometimes, tea waste is mixed with lime for re-use in gardens, which increases the toxins in soils where it is applied or dumped. Aware of the danger from poor handling of tea waste, tea companies are investing in waste water, and tea waste treatment before disposal.

Conservation policies and plans of Mabale Tea Growers Company Limited

Mabale Growers Tea Factory Ltd is aware that Tea processing involves consumption of large quantities of water, fuel wood, electrical energy and use of agro-chemicals. The company is committed to taking all practical means and measures to the following: 1) minimize the use of fuelwood energy, water and other natural resources in all its activities to ensure sustainable use of natural resources; 2) procure and use environmentally sound products that ultimately reduce usage of hazardous materials and products that do not conform to environmental requirements and standards; 3) continually adapt and integrate cleaner production concepts in the tea processing activities; 4) train farmers, workers, and contractors in environmental matters; and 5) observe the national environmental legal requirements; and 6) improve environmental performance to minimize environmental damage.

Mabale Tea Factory Company Ltd received the Fair Trade certification awarded by Fairtrade Labelling Organizations International (FLO³). Other certifications so far acquired by the company include the Environmental Management System certification ISO14001, and the Hazardous Critical Control Point (HACCP) ISO22000 certification. The hazard critical control point certification is aimed at reducing the risk of food poisoning due to excessive use of agrochemicals and poor disposal of factory waste. The Fairtrade system is distinct from other ethical trading schemes as it provides producers two major monetary benefits: the *Fairtrade Minimum Price* and the *Fairtrade Premium*. The Fairtrade Minimum Price is a guaranteed price that is said to cover the costs of sustainable production. The set Fairtrade Price is always the minimum price paid but rises if market prices are higher. *The Fairtrade Premium* is a separate payment designated for social and economic development in the producing communities. The producers themselves decide how these funds are to be spent. As part of the Fairtrade criteria, registered producers are accountable to FLO-CERT for the use of this money. It is generally used for improvements in health, education or other social facilities, although it may also be used for certain development projects to enable farmers to improve productivity or reduce their reliance on single commodities. Mabale Tea Factory Company limited is using fair-trade premium to promote sustainable tea farming for its outgrowers.

The company is also committed to promoting soil and water conservation practices on its five tea estates, and among its out-growers. The company owns wetlands on its estate property, which it has clearly demarcated and installed signposts to guard against encroachment. The company has made an effort to sensitize communities about the value of wetlands and the need to protect them. In order to protect the riparian areas from pollution, a strip of 15 meters from the tea shamba and the stream or river is left uncultivated. The company has established a multipurpose nursery to supply tea seedlings, eucalyptus and indigenous tree seedlings for its agroforestry program, and supply to its farmers. They have set a target to stop wood harvesting from natural forests at least by 2015. The company boasts of 217.7 ha of eucalyptus plantation. It has also acquired more land to increase its tree cover. It is planning to survey and map its wetland areas early next year. It is also pursuing the Rainforest Alliance Sustainable Agriculture Certification (see <http://www.ra.org/agriculture/certification>). Briefly, Rainforest Alliance offers validation and verification services to forest-based carbon projects under a variety of credible standards, including the Chicago Climate Exchange, Plan Vivo and Voluntary Carbon Standard. Rainforest Alliance also offers tourism certification, and forestry services certification that include forest certification and legality, logging and forest carbon verification, as well as forest products chain-of-custody certification. To become Rainforest Alliance Certified, farms must be audited by the independent international certification company, Sustainable Farm Certification, Intl. (<http://sustainablefarmcert.com/>), which certifies to the Sustainable Agriculture Network Standards.

³ Fairtrade Labelling Organizations International (FLO) was established in 1997, as an association of three producer networks and 21 national labeling initiatives that promote and market the Fairtrade Certification Mark in their countries (<http://www.fairtrade.net>). Fairtrade certification is a product certification system designed to allow people to identify products that meet agreed environmental, labour and developmental standards. FLO International develops and reviews Fairtrade standards and assists producers in gaining and maintaining certification and in capitalizing on market opportunities on the Fairtrade market. To ensure that the system is transparent, the standards are developed and reviewed by the FLO Standards and Policy Committee, in which FLO members, producer organizations, traders and external experts participate. FLO-CERT ensures that producers and traders comply with the FLO Fairtrade Standards and that producers invest the benefits received through Fairtrade in their development. Operating independently from any other interests, it follows the international ISO standards for certification bodies (ISO 65).

Conservation policies and plans of Mpanga Tea Growers Factory Limited

Mpanga Growers Tea Factory Ltd is certificated as Fair Trade partner by FLO. It one of the companies that are involved in the GEO Fair trade project focused on traceability. In addition, the company is Hazard Critical Control Point (HACCP) certified, and completed the application process for the ISO2200 certificate. Currently, the factory is involved with waste water treatment before discharge in the nearby stream. Unlike Kenya whose tea industry is well developed, most of the tea shambas in Uganda were recently revitalized for green leaf production. As such, good agronomic and cultural practices are still in their infant stages. Similarly, Mpanga's own tea estates and its outgrowers tea shambas were recently rejuvenated. Thus, tea cover is not well established to protect soil moisture, and reduce weeds infestation. Typically, companies and farmers rely on the use of agrochemicals to suppress weeds, and ameliorate soil fertility. The company, however, is experimenting with agroforestry trees such as musizi (*Maesopsis eminii*) to provide shade for tea and litter for soil fertility enhancement. To steer this process, the company is working in partnership with the African Commonwealth Universities that are supporting African graduate students to conduct research in energy and environmental conservation under the Africa Knowledge Transfer Partnership. The company has over 100 ha of fully stocked eucalyptus plantation, and has installed energy-efficient boilers fitted with air pre-heaters to conserve energy.

Other efforts to improve energy efficiency are: appropriate selection of tree species for planting (at the moment *Eucalyptus grandis* is the most favorable), good choice of biomass materials to use, provision of energy efficient cooking stoves for its workers, waste minimization, recycling of waste (e.g. sawdust reuse in boilers) and ensuring good wood seasoning practices. According to Rwenzori Highlands (now McLeod Russell Uganda Limited) records, one cubic meter of mature eucalyptus firewood produce 480 kg of made tea compared to 320 kg of made tea produced from the same quantity of firewood collected from a six-year old eucalyptus crop (Turyareeba and Drichi 2001). In the same report, the company reported that a change in boiler technology resulted in 54 percent reduction in wood consumption (i.e. 220 kg of made tea/m³ of firewood to 480 kg of made tea/m³). According to the Ministry of Energy and Mineral Development (MEMD) (2008), 1.2 tonnes of wood is required for every tonne of made tea. In comparison, 6kWh of thermal energy is needed to process one kilogram of made tea (MEMD 2008). The company has a target of reducing its fuelwood consumption for processing tea from 0.6kg of made tea/kg of wood to one kilogram of made tea per 0.1kg of wood. The company is also involved in the climate change project funded by comic relief to develop guidelines and strategies for climate change mitigation and adaptation.

Conservation policies and plans of Mcleod Russel

Like the other tea companies discussed above, Mcleod Russell has acquired a number of certifications such as the Environmental Management System ISO14001, Quality Management System, and Food safety management system. All estates are ISO9001 and ISO14000 compliant. The company's activities are guided by the ten principles of sustainable agriculture namely: social and environmental management systems, ecosystems conservation, wildlife conservation, water conservation, treatment and good working conditions for workers, occupation health and safety, community relations, integrated crop management, soil management and conservation and integrated water and waste management. The company has invested in plantation establishment to ensure that they are fuelwood energy sufficient. From the company records, the establishment cost per hectare of eucalyptus is estimated at an average of USD1000. The company is also in the process of securing a Rainforest Alliance certification, which requires that all the above principles are implemented, and audited. The company commissioned a biodiversity assessment survey on Mwenge Tea Estate conducted by local consultants. The report, which is available at the company's head office in Kyenjonjo and can be accessed on request, indicates that 10 mammal species,

121 bird species, 74 tree species, and 24 butterfly species were recorded present on the estate (Muhabwe *et al.* 2010). The species lists could even be higher than what is recorded so far, if a comprehensive biodiversity assessment is done.

Conservation policies and plans of Toro and Mityana Tea Company

With reference to the potential corridor Map that WCS produced (Nangendo *et al.* 2010), some of the company's tea estates are closely linked to corridor 23. The company supplements its fuelwood energy with electricity from the national grid. The company is exploring the economic opportunities for constructing its own hydro power plant in the near future. Traditionally, 25% of the estate property was under eucalyptus plantation for firewood supply. At the moment, the quantity of wood (kg) required to produce one kilogram of made tea has been reduced to 1kg/5kgs of made tea due to better technology. The company depends heavily on both surface and ground water sources for its farming activities. As such, it is investing in the protection of wetlands, but these efforts need to be matched with community involvement. The company is willing to invest in protection of water sources around its estates. The company is also considering to plant more eucalyptus trees on NFA leased land (50 ha). This will help to create more jobs on the estate for forest-dependant people to reduce pressure on natural forests. The company also wants to explore the opportunity of reviving the tourism activities in the area, especially the nature walk from Itwara Forest Reserve to the old Semliki Lodge. The company is also interested in re-establishing a nature-guided walk to Kibaale National Park.

C. Kinyara Sugar Limited

Kinyara has the smallest number of outgrowers compared to Kakira, and Sugar Corporation Uganda Limited (SCOUL) (**Table 2**). The company receives sugarcane from 2500 contracted outgrower farmers accounting for 4800 ha of sugarcane plantation. The average farmer has three hectares of land. Kinyara Sugar Limited only purchases from contracted farmers, maintains very thorough client screening and monitoring, and is quite rigid in both abiding by its contracts and in enforcing its contracts. Among the three major sugar producing companies in Uganda, the sugarcane yield for Kinyara Sugar Limited is slightly higher (70-90 metric tonnes/ha/yr) than that of Kakira Sugar Works Limited (70-86 metric tonnes/ha/yr) (Johnston *et al.* 2007), and above the global average at 65 metric tons per hectare. The best performing country is Egypt, producing 105 metric tonnes/ha followed by Philippines, and Thailand at 92.6 metric tonnes/ha. The conversion of sugarcane to sugar for Kinyara, and Kakira is 11.7 tonnes per hectare/year, while that of SCOUL is relatively low (9 tonnes/ ha/yr). Kinyara sugar factory has a production capacity of 1,500 tonnes of sugar per day. Sugar is the primary product produced by the company. The by-products include molasses, which is converted to alcohol, and is supplied to international distillers to produce spirits, and for use in confectionery, and bagasse (i.e. the fibrous matter that remains after the juice has been squeezed out of sugarcane stalks) used for energy production.

Generally, the sugar industry contributes highly to Uganda's economy. According to Farhan Nakhooda, Projects Director, Kakira Sugar Works Ltd, "the sugar industry contributed over UGX 62.5billion (US\$34million) by way of taxes in 2005, direct employment provision to over 35,000 persons, including outgrower schemes, extension services (including supply of inputs and equipment services on credit) and purchase sugarcane from over 7,000 farmers".

Table 2 Land ownership for the three major sugar companies operating in Uganda

Classification of land ownership	Kinyara Sugar Ltd		Kakira (Madhvani)		Sugar Corporation Uganda Limited (SCOUL)	
	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
Nucleus Estate	7500	61.5	11,000	50.0	12,000	80.0
Government of Uganda lease (NFA)		0.0	1,000	4.5		0.0
Private land lease	0	0.0	0	0.0	1000	6.7
Outsourcing				0.0		0.0
Large private estates	900	6.6		0.0		0.0
Small out-growers	2,500	20.5	10,000	45.5	3,000	20.0
Large-self funded	1,400	11.5		0.0		0.0
Total area	12,300	100	22,000	100	15,000	100

Source: Moyini et al 2009 with statistics updates from this study

Sugar growing impacts on the environment:

Globally, sugar production and consumption has increased over the recent years. This increase in global demand, however, has caused enormous pressure for sugar companies and individual farmers to expand the acreage into forests and wetlands. In Uganda, Mwavu and Witkowski (2008) who analysed land-use and cover changes around Budongo Forest Reserve (BFR) from multi-temporal Landsat images of 1988 and 2002, and associated field-based studies between 2003 and 2004, noted that the area under sugarcane cultivation increased over seventeen fold, from 690 hectares in 1988 to 12,729 ha in 2002 with a concomitant loss of about 4680 ha (8.2 per cent) of forest/woodland, mainly on the southern boundary of Budongo Forest Reserve. According to Mwavu and Witkowski (2008), individual smallholder sugarcane plantations covered distances ranging from 30 m to 1440 m along the BFR edge, with no buffer zone, resulting in direct conflicts between farmers and forest wild animals. This also contributed to the loss of forest patches on both private and communal lands adjacent to BFR in an attempt to get rid of the primates.

Following a proposed plan for clearing a third of the Mabira Forest Reserve for agricultural use, Moyini et al. (2008) showed that, in the short run, growing sugarcane would lead to higher economic benefits of US\$ 3.6 million compared to US\$ 1.1 million gained from maintaining the forest reserve for conservation. In the long-run, however, the benefits from maintaining Mabira Forest Reserve for

biodiversity conservation, and provision of other ecosystem services are far greater (US\$29.9 million) than the sugarcane production benefits (US\$4.5 million) (Moyini et al. 2008).

Conservation policies and plans Kinyara Sugar Works Limited (RAI group)

Kinyara Sugar Limited has no conservation plan in place, but has hired a consultant to develop one. Despite the lack of a documented conservation plan, the company is already implementing conservation activities on its own estate and in the adjacent communities. The company is conserving natural forest patches and wetlands that constitute nearly 20 percent of its core farming area. The company is also supporting contract farmers to practice sustainable agriculture by providing technical advice, and inputs through its extension service program. At the moment, the company has a policy that prohibits purchase of sugarcane grown inside protected areas, and for the contract farmers, one-third of the farmer's land must be reserved for food production. This is intended to discourage farmers from encroaching on natural forests for food production. The company employs 200 guards to protect the sugarcane from vermin, and fire damage, which costs it nearly USD135,000/year in payroll and supplies. Other conservation-related initiatives include the development of energy efficient cooking stoves to be made available to the company workers and adjacent communities. The company is proposing to develop the acquired 20 hectares of natural forest adjacent to Kasokwa Forest Reserve into an ecotourism site. The company has plans to establish eucalyptus plantation on NFA leased land to cater for its fuelwood needs. In addition, the company started producing five mega watts of electricity from biomass (bagasse) last year. This power is planned for connection to the national grid. The company has the potential to produce nearly 20 mega watts from bagasse, however, it lacks the required infrastructure to connect this power to the national grid. The company has concluded its negotiations with UMEME to produce to full capacity and supply electricity to the national grid. An energy purchase agreement between the two companies is already signed.

On the other hand, Kinyara Sugar Company faces a number of challenges in implementing its conservation plans namely a) encroachment by local communities on the company's forests and wetlands; b) inadequate environmental education and awareness for the adjacent communities; c) limited technical capacity to plan, and managed the company conservation areas; d) limited land for expansion – option is to secure land in the abandoned ranches; and e) lack of a policy/legislation to promote green sugarcane harvesting as opposed to fire-harvesting, a technique they consider appropriate for reducing carbon emissions.

D. Energy Companies

UMEME Uganda Limited is responsible for retail power distribution in urban centres within one kilometer radius. UMEME is Uganda's main retail power distribution company, which established its operations in Uganda in March 2005 under a 20-year concession with the Government of Uganda. Umeme is wholly owned by the Commonwealth Development Corporation (CDC) of the United Kingdom. CDC is a UK government owned company based in the United Kingdom with investment assets mainly in the emerging markets of Africa, Asia, and Latin America but with its main emphasis in sub-Saharan Africa and South Asia.

Oil and Gas Companies

The government has so far licensed five Exploration Areas out of a total of nine. These are Exploration Areas 1, 2 and 3A, 4B and 5 (**Figure 1**). Exploration Areas 1 and 3A were jointly licensed to Canada's Heritage Oil and UK's Tullow Oil. Tullow then bought out Heritage's share in August 2010, leaving it with 100% percent interest in Exploration Areas 1, 2 and 3A. Tullow has announced its intentions to form

a joint venture partnership with CNOOC and Total. Exploration Area 4B (Southern Lakes Edward-George Basin) is licensed to the UK's Dominion Petroleum and Exploration Area 5 (Rhino Camp Basin) to another UK-listed small company, Neptune Petroleum, formerly known as Tower Resources. So far, 32 out of 34 wells drilled in the country since 2002 have encountered oil and gas, representing a 94 percent success rate.



Figure 1 Map of Oil and Gas exploration areas showing the status of licensing

Currently, Uganda does not have an up-to-date regulatory framework for managing its oil resources. The existing legal framework for the sector is focused on exploration activities only. To update and expand its legislation, the government is introducing a new Petroleum (Exploration, Development, Production, and Value Addition) Bill, which will, among other things, include provisions for the development and production of natural gas. The Bill will also provide enough detail on how oil revenue will be shared. Schedule IV prescribes a share of 85 percent for the Central Government and 15 percent for the Regional and Local Governments but no additional information on royalty sharing is available.

Environmental policies of Oil Companies

The company has produced an environment assessment registry, and received an ISO14001 accreditation. It has also submitted a waste management plan to National Environment Management Agency for review and subsequent approval. Nevertheless, the Oil and Gas companies, particularly Tullow Oil has been consulting the services of technical organizations in environmental and conservation matters such as Wildlife Conservation Society (WCS) to improve its operations aimed at reducing damage to the environment. WCS has trained the company's staff in environmental impact assessment and guided them through the process of developing guidelines for environmental impact monitoring. Other NGOS such as WWF have been closely engaged with the oil companies studying environmental best practice and its application to the Uganda oil fields. WCS and government environmental agencies are encouraging the Oil and Gas companies to conduct field impact assessment studies instead of site-based environmental assessments. WCS together with Uganda Wildlife Authority are helping Tullow Oil to develop an environmental framework based on the biodiversity assessments that the Oil Company is financially supporting. With technical support from UWA and WCS, the company is in the process of developing environmental impact monitoring indicators to help identify trigger points for action as a result of its activities. NEMA is also working with Tullow Oil to develop a biodiversity offset scheme for its exploration environmental impacts in MFNP, Kabwoya, and Kaiso Tonya Wildlife Reserves.

E. Financial institutions

Centenary Rural Development Bank Limited

Centenary Rural Development Trust started in 1983 as a credit trust and by 1985 the bank started providing financial services. In 1993, it registered as a full-service Commercial Bank. In 1993 after Centenary Bank became a fully-fledged Commercial bank. The ownership and share holding is composed of the Uganda Catholic Secretariat that owns 31%, Catholic Dioceses in Uganda with 39%, Stitching Hivos-Triodos Fonds, a fully owned subsidiary of Triodos Bank, a Dutch Investment Bank (18%), SIDI, a French Investment Bank with 11%, and Individual shareholders (1%). The bank has a customer base of over 650,000 and over 94,000 borrowing customers. The bank's vision is "to be the best provider of financial services, especially credit services in Uganda". The main objective of the bank is "to promote and enhance development through loans to rural farmers, processors of agricultural produce, small manufacturing entrepreneurs and small traders in both rural and urban areas, and importers and exporters." The bank has branches in all districts of western Uganda.

The bank focuses on lending for commercially oriented farmers in order to mitigate risk. It operates a wide range of credit products, however, most relevant to this study include, Micro Business Loan, Agricultural Loan, Animal Traction Loan, Corporate Loans, Solar Loan, DANIDA Agricultural Loan, Veterinary Association Loan Scheme (VALOS), Rockefeller Farmer Guarantee Program (RFGM), Land Loan Scheme, and Collaborative Water & Sanitation Credit Scheme. The Centenary bank with support from the World Bank is developing an agricultural lending unit. The bank is also directly working with the government to develop a

national agricultural credit facility under the government of Uganda's consolidated fund. The government of Uganda in partnership with commercial banks established an Agricultural Credit Facility amounting to UGX 60 billion to be extended to borrowers at an interest rate not exceeding 10 per cent per annum for a maximum period not exceeding of eight years. Under this arrangement, the commercial banks have made a significant contribution to development of the agricultural sector. The main objective of the Credit Facility is to facilitate farmers in the acquisition of agricultural and agro-processing machinery and equipment. To date, UGX 54 billion has been disbursed from the central government and partner financial institutions for investments in irrigation schemes, tea processing and machinery among others. Centenary Bank's Corporate Social Investments (CSI) Unit is only one year old, having been created in 2009. The bank plans to invest one percent of its annual profits toward supporting CSI activities. Of this, twenty five percent is committed to the environment with a target of planting one million trees within a short period.

Barclays Bank of Uganda Limited

Barclays Bank Uganda Limited is a 51 percent subsidiary of Barclays Bank PLC. The Government of Uganda owns the remainder of the shares. Barclays bank operations in Uganda started in 1927 with three branches in Central and Eastern Uganda. Barclays Bank of Uganda is supervised by the Bank of Uganda. In 1969, the bank was incorporated as an independent subsidiary of the Barclays PLC. Barclays Uganda's growth of market share focused on the Corporate and High Net Worth (HNW) until 2006. Barclays bank is willing to support conservation in Uganda, and is already working with the government to plant trees. In particular, Barclays bank in partnership with National Forestry Authority is supporting afforestation initiatives in Nonve CFR, Wakiso District.

Stanbic Bank Uganda Limited

Stanbic Bank in Uganda is part of one of Africa's leading banking and financial services group, Standard Bank. Standard Bank, based in Johannesburg, South Africa, has total assets of about US\$81 billion and employs about 35 000 people worldwide. Its network spans 17 sub-Saharan countries (including South Africa) and extends to 21 countries on other continents, including the key financial centres of Europe, the United States and Asia. In addition to banking, Standard Bank has a strategic interest in the insurance industry through its control of the Liberty Group, one of Africa's leading life insurance offices and financial services groups. The bank was founded in Uganda as the National Bank of India in 1906, which after several name changes became Grindlays Bank. It re-established a connection with Uganda When the Standard Bank Group bought the Grindlays' network in Africa in October 1993. Stanbic Bank is licensed as a merchant banker, stockbroker and financial adviser by the Uganda Capital Markets Authority, which licensed the Uganda Securities Exchange In June 1997. In February 2002, Stanbic Bank bought 90% shares into Uganda Commercial Bank, a largely retail government-owned bank that operated a countrywide network consisting of 67 branches. The bank's financial services can be found on their official website <http://www.stanbicbank.co.ug>. Of importance to this study is the agri-business loan scheme.

Microfinance Institutions

The Association of Microfinance Institutions in Uganda (AMFIU), an umbrella organization for all microfinance institutions operating in Uganda, was willing to provide relevant contacts to microfinance organizations, and the Microfinance Forum. The Microfinance Forum was formed in 1997 with the guidance of the Ministry of Finance Planning and Economic Development (MFPED) to bring together all microfinance practitioners. It could be very useful to contact this organization during any follow-up work to this report. Broadly, the forum aims at enhancing the effective coordination and contribution to the professionalism of

Microfinance in Uganda. Participation in the forum is open and sometimes consultants and technical assistants searching for information in Microfinance attend.

Microfinance is the provision of services (credit, savings, insurance) to poorer individuals or communities which are often un-served or under served by traditional financing institutions. Microcredit refers to programs that provide credit for self-employment and other financial and business services (including savings and technical assistance) to very poor persons. The microcredit is extended by microfinance organizations, which also offer savings, insurance or other financial services. The philosophy behind microcredit is to provide access to physical capital as the key to better income opportunities. In the recent years, microfinance institutions extending small loans to the poor for income-generating activities and other financial services, has grown enormously in its popularity as a development tool. The World Bank estimates that there are now over 7000 microfinance institutions serving sixteen million poor people with an annual cash turnover of approximately US\$2.5 billion (Anderson et al. 2003; p265). During the 2000 Microcredit summit, a goal was set for microfinance organizations to reach “100 million of the world’s poorest families, particularly the women with credit for self-employment and other financial and business services by the year 2005” (<http://www.gdrc.org/icm/summit/declare-support.html>). According to the Association of Microfinance Institutions of Uganda (AMFIU), with approximately 100 members encompassing all the regulated MFIs and many of the larger unregulated ones, the microfinance industry has grown from an insignificant sideline to a key sub-sector in Uganda’s economy.

Over the last two decades, the clientele has increased from below 300,000 to over 3.5 million customers. This, however, has been possible with dedicated funding from well-focused donor programs such as USAID-PRESTO, Microsave, EU-SUFFICE, USAID SPEED and Rural SPEED, DED technical support, GTZ-Sida FSD Program, FSDU-DFID, CARE and others that contributed to industry growth through training, entrenchment of sound practices, provision of wholesale loans, systems development and institutional technical assistance. It is anticipated that changes in the physical, human, and social assets that arise from microcredit activities will affect the community’s production, consumption, and management opportunities and decisions toward the environment. For example, money could easily be diverted away from intended development programs by loan recipients to exploit forest resources or expand farmland into forested areas. According to AMFIU, there is an opportunity for microfinance organizations to contribute to the forest conservation in Uganda.

F. Public agencies and district local governments

Masindi District Local Government

Under the Local Government Act of 1997, in the second schedule, district local government authorities are responsible for enacting ordinances (district level) and bye-laws (sub-county level) to protect the environment, and conservation natural resources such as land, forests, streams, and wildlife outside protected areas. With support from WWF, Masindi district local government has proposed two ordinances, that is, production and marketing ordinance to encourage eco-friendly agriculture and promote energy efficient technology development, and the environmental standards and compliance ordinance aimed at reducing environmental degradation in the district. The district is committed to promoting tree planting under the Forest Income Enhancement and Forest Conservation Project, through the District Forestry Services office, and with support from NFA, and conservation organizations. Masindi district has and is still supporting public-private partnerships to promote conservation through collaborative forest management in and around Budongo Central Forest Reserve (NFA, Budongo Forest Conservation Field Station, and CARE), ecotourism development (JGI), and Carbon credit schemes (ECOTRUST). The district is proposing to secure land titles for protected area (e.g. park, wildlife reserves, forests, rivers, and wetlands)

buffer zones, and road reserve areas in order to stop encroachment. The district through its natural resources and environment, water resources department, and district forestry services is willing to support the protection of riverine forests that constitute the potential corridors.

The district, however, is constrained by the slow process of completing the district land use plan due to limited finances and the lack of national policy guidelines for land use planning. According to the district planner, “the lack of a district land use plan, the limited human and financial capacity to enforce the law, and the reluctance by the central government to fully decentralize powers and authority related to land and natural resources governance have made the work of districts to reduce environmental degradation and conserve resources very difficult.” For example, district authority is worried about the effects of converting ranchers to other forms of land use by the investors that have bought them. Mukwano Group of companies is reported to have bought Ziwa ranch along Kafu-Masindi road, and Bunyoro Growers have acquired land to grow cash crops. Other constraints include inadequate community environmental awareness, delayed disbursement of funds by the central government to implement environmental programs.

Kibaale District Local Government

The district authority recognizes that land ownership presents a challenge to land use planning and development. The district local government, however, lacks funds to develop a district land use plan. Despite the financial limitations, the district local government has embarked on a number of initiatives to address the land issues. For example, with funding from a donor, the district was supported to construct a Land survey and mapping office after agreeing to have the plot of land and building title registered in Kibaale District Local Government. At the moment, the departmental staff have been tasked to identify all land available for purchase so the district can use its own funds to buy it. The technical wing has proposed that the district local government be allowed to purchase land available on the market to plant trees as a strategy for sustainably financing district programs. The proposal will be presented to the newly elected district council early next year. This will help to accumulate land acreage that is viable for biodiversity conservation and tree planting for carbon credits, and build a constituency of voluntary conservationists within the district. If passed, the investment plan will be developed and included in the three year district rolling plan. It will also make community capacity building, particularly in business negotiation skills, business development and financing, and information dissemination easier. At the moment, one acre of land is priced at UGX 500,000 only (US\$250) excluding legal, surveying and titling costs. This presents an opportunity for conservation organizations to engage the district local governments directly to develop the land purchase financing framework, including the identification of philanthropists willing to donate money for conservation. Conservation organizations should explore the possibility of partnering with district local governments to purchase land for wildlife conservation. Security of land and tree tenure will be guaranteed under this arrangement. Alternatively, a Land Trust or Conservation Trust Fund could be set up to facilitate the land purchase process. The district has established a two acre eucalyptus woodlot to act as a demonstration to encourage individuals to plant trees for fuelwood and income. With support from development partners, and conservation NGOs (e.g. WWF), the district is investing in tree nursery establishment and seedling provision to the communities to plant trees.

Kyenjonjo District Local Government

The district local government authority is promoting tree planting by demanding that each subcounty plants at least 1000 trees each year, and through the provision of seedlings to the farmers. With support from CARE, they are supporting communities and individuals to establish tree seedling nurseries to meet the ever increasing demand for seedlings. The district is willing to support the protection of corridors by incorporating the afforestation, and restoration programs in the district rolling plans. The district is also committed to law enforcement to reduce illegal timber and charcoal production in protected areas, and limit the licensing of charcoal dealers in the district. In addition, the district is committed to working with UWA, NFA, and conservation organizations by offering political support through community mobilization.

G. Water sector public agencies

The most important public utility agencies that were identified for consultations are National Water and Sewerage Corporation (NW&SC), responsible for water supply and sewerage collection in urban towns and municipal councils, and the directorate of water resources management.

National Water and Sewerage Corporation

Currently the National Water and Sewerage Corporation (NWSC) operate piped water supplies in 23 areas including Kampala. NWSC serves a population of approximately 2.28 million people (target of 3.10 million) which translates into water service coverage of 74%, a gradual rise from 60% in 2002. In the financial year 2009/2010, the volume of water supplied was 3.28 million m³, of which 2.63 million m³ were sold (i.e. 20% was lost to illegal connections, and leakage). The towns of Hoima, Mubende and Masindi, however, fall below the average coverage of 70 percent. In reality, NWSC supplies water to about 246,456 customers countrywide, of which 88% are active connections (MWE 2010a). The average unit cost of production in NWSC towns has gradually increased from UGX 600 in 2001 to 1,388 per m³ in 2010 (MWE 2010a), however, the current tariff of UGX 2,088 permits NWSC to cover its operating costs, including depreciation, and make a profit. The average per capita investment cost for water supply to several centres with high populations was low (US\$49), attributed to the nature of technology and transmission systems. Generally, the overall per capita investment cost for rural water supplies by the Government of Uganda is US\$43. This cost could be avoided if government is committed to watershed protection.

MWE is implementing an Output-Based Aid Pilot project to provide improved access to piped-water supply services in small towns and rural growth centers (RGCs). Output Based Aid (OBA) is a multi-donor trust fund which aims to fund, design, demonstrate and document Output-Based Aid approaches that support the sustainable delivery of basic services to those least able to afford them and to those currently without access. Under this project, NWSC offers subsidized connection fees, free labour, pipes and fittings for all customers of any distance from the NWSC distribution network. The tariff structure highlights the level of cross subsidies offered to consumers (**Table 2**).

Table 2 National Water and Sewerage Corporation tariff Structure FY 2009/2010

Customer Category	Water tariff 2009/10 (UGX/m³)	Sewerage Tariff (Only for customers with sewerage services) UGX
Public Standpipe	982	0
Domestic	1,519	1,139
Institutions / Government	1,870	1,870
Commercial up to 500m ³ /month	2,294	2,294
Commercial 500m ³ - 1,500m ³ /month	2,294	2,294
Commercial >1,500m ³ /month	1,833	1,833
Weighted Water Tariff	1,750	
Weighted Water & Sewerage Tariff	2,088	

*Sewerage is measured as a % of water consumption. **Source:** MWE Water and Environment Performance Sector Report 2010

NW&SC argued that implementing a uniform tariff structure across all its towns is intended to ensure equity in water supply and pricing. This fee structure, however, does not reflect the true value of water supply to the consumers because these tariffs are derived based on the cost of abstraction, distribution and management only, excluding the costs of watershed protection. The government is in the process of reviewing the water pricing tariffs, and water extraction permits to reflect the total cost of water resources management in Uganda, including cost-sharing mechanisms for watershed protection. In addition, companies licensed to extract water such as NW&SC will be asked to make financial contributions toward the protection of catchment areas within the water management zone.

NW&SC noted a number of challenges that limit its involvement in conservation. These are 1) NW&SC lacks the mandate to protect the entire catchment area where it is licensed to abstract water rather it is permitted to protect water source points by ensuring that at least a 20-meter radius of natural vegetation is enforced. After payment of water extraction, and sewerage discharge permits to DWRM, the directorate, Wetlands Management Department (WMD), and NEMA are responsible for the protection of watersheds, however, DWRM is thin on the ground; 2) enforcement of the environmental laws is handled by multiple agencies such as NEMA, UWA, NFA, WMD that are inadequately facilitated and lack proper coordination, yet their operational areas, and mandates overlap; 3) self-monitoring for private companies is very problematic and prone to self exoneration; and 4) national land use policy is not yet translated into concrete actions, making it difficult to work effectively with the local governments to secure the water source points; and 5) companies and individuals that are not connected to NW&SC sewerage system are difficult to police and engage in illegal disposal of raw sewerage.

Directorate of Water Resources Management

Government agencies critical to water resources management are the Directorate of Water Resources Management (DWRM), and the Directorate of Water Development (DWD) under the Ministry of Water and Environment. According to the Water Act 1997 (chapter 152), “all rights to investigate, control, protect and manage water in Uganda for any use is vested in the government and shall be exercised by the Minister and the director in accordance with the Water Act.” The same Act under subsection 8(iii), “empowers the minister, in relation to any water source, where the situation so requires (e.g. water shortage), by notice published in a manner appropriate for the area, on the advice of the Water Policy Committee, to declare any part of Uganda to be a controlled area and establish a comprehensive and integrated plan for managing land, water and other natural resources within that area.” The two directorates manage and coordinate the full range of Integrated Water Resources Management (IWRM) functions and activities at the international (transboundary), national and regional levels. According to DWRM, the allocation of water, in the order of priority, is for domestic consumption, environment, and the rest for other market-based allocations. Water resources management typically comprises three main core functions. These are 1) Monitoring, assessment and information services: Included in these functions are all the required hydro-metrological and water quality monitoring systems and activities, and the central and regional management information systems (MIS) required to systematically collect, quality control and disseminate useful water quantity and quality data and information; 2) Planning and regulation, which includes all the national systems for issuing and enforcing permits for abstraction and discharge (quantity and quality) and ensuring compliance as well as planning for transboundary, national, regional and catchment management and development of water resources; and 3) provide advice and facilitation (technical/organisational/financial). Under this core area, the directorate is responsible for facilitating decentralised water resources management, transboundary activities, water policy and legislation, research, communications, public awareness raising and sensitization, and the provision of technical and financial support to stakeholders involved with water resources management and development of conservation activities.

DWRM has embarked on a number of processes to improve water resources management, including the development of financing options. Following the Water Resources Management (WRM) sub-sector reform study of 2005, the directorate of water resources management under the Ministry of Water and Environment (MWE) has embarked on decentralization of water resources management in Uganda. This process is consistent with Uganda’s National Water Policy (1999) which encourages decentralization of the WRM functions that can best be performed at the district or community level, and the Local Government Act (1997), which provides for creation of multi-district administrative instruments where clusters of districts cooperate administratively. The DWRM has developed a National Catchment-based Water Resources Management as a framework for decentralizing water resources management in the country. Four Water Management Zones (WMZs), that is, Lake Victoria, Lake Kyoga, Albert, and Upper Nile have been created and the establishment of a number of catchment-based management organizations (CMOs) throughout the country is underway. This approach is intended to promote more effective stakeholder participation, including collaboration with NGOs and other non-governmental players to ensure water resources are managed and developed in a sustainable manner. The approach would enable water resources assessment, planning, management and development at the catchment-level including catchment-based plans. The findings from a study commissioned by MWE/DWRM indicated that realigning water management zones with hydrological boundaries will help to safeguard against the inherent risks of additional district fragmentation and mismatches between water management zones, and administrative units. Operationalization of the catchment-based water resources management should also be centered on building long term partnership arrangements with authorities, agencies, NGOs, private sector, and

institutions with legal responsibilities for aspects of water and related resources management. In addition, they should encourage stakeholder participation in the management of catchment-based water resources for sustainability.

Within the catchment management zones, hotspot catchment areas have been identified based on elaborate criteria that include the social aspects (e.g. population density, potential risks from urbanization), economics (i.e. hydro-electric power production, mining, urban and industrial development), threats or key challenges to the catchment (e.g. water stress, pollution, threats to vital ecosystem habitats), and opportunities. The sanitary survey of selected water sources conducted by the Directorate of Water Resources Management under the Ministry of Water and Environment, revealed the following: medium to high risks to contamination mainly caused by poor sanitation and hygiene around water points, lack of water source protection and encroachment on water source catchment zones (MWE 2010b).

Of particular relevancy to this study is the Albert Water management zone. The Albert Water Management Zones covers over 45,000 km², which fall into two district terrain system systems namely: the northern west sloping peneplain (1,000 – 1,200 asl.) of the catchment contributing to the Kyoga Nile downstream of L. Kyoga; and the rift valley of the catchments downstream of L. Edward discharging into L. Albert (MWE 2009; MWE 2010b). The key challenges for this water management zone are environmental hazards and impacts of oil resources exploration and development, deforestation, and unsustainable agricultural practices. Regular monitoring of surface water and groundwater is underway, contributing to an improved understanding of water resources in the country. Groundwater maps have now been prepared for 34 districts in the country with aim of providing key information to assist Local Governments and NGOs in their planning of improved water supplies. In Murchison Falls – Semliki landscape, DWRM is coordinating various water resources management-related activities as part of the process to implement catchment plans that were developed for river Nkusi, Wambabya, and Mpanga under Lake Edward and Albert Fisheries project (LEAF) and WWF Lake Albert Ecosystem Catchment Management Initiative.

The DWRM is in the process of preparing a national water resources assessment and strategy intended to provide high-level decision-makers and others with an up-to-date and accurate information and framework for water resources management and development, including climate change adaptation, in Uganda. Some of the water resources management initiatives include collection of accurate and up to-date records of existing water sources in the country, which is the basis for estimating safe water coverage. This information is very important for planning, policy formulation, strategy development and resource allocation at national and both inter and intra district levels. It is also key in monitoring and follow-up of sector activities as well as in measuring performance of the entire sector. Currently the Ministry of Water and Environment (MWE), as part of its on-going initiative to “Revitalize” the Water Supply and Sanitation- Management of Information Systems (WSS-MIS) , has formulated and kick-started the Water Atlas Up-date Project (WATSUP) aimed at up-dating the inventory of water sources carried out a decade ago (MWE, 2010c).

It is also establishing a national Water Resources Institute to develop human resources capacity in Integrated Water Resources Management (IWRM) approaches required to achieve sustainable water resources management in Uganda. It is also developing a coherent strategy for stakeholder engagement and participation in all aspects of IWRM. The European Union Water Facility is funding the capacity building for Integrated Watershed Management in Eastern Africa (IWMNet) project coordinated by the Universtat Siegen and in partnership with Kenyatta University (Kenya); University of Dar es salaam (Tanzania), Makerere University, Arba Minch University (Ethiopia) and German Technical Cooperation (GTZ) in Kenya, and Tanzania, and the German Academic Exchange Service (DAAD). In Uganda, this funding has resulted in the development of an Integrated Water Resources Management degree program to be offered in the

academic year 2010/2011 at Makerere University in the Faculty of Agriculture, department of Soil Science. Similarly, the department of Crop Science at Makerere University is championing the implementation of a Rockfeller Foundation funded project for “strengthening East African Resilience and Climate change Adaptation capacity through training, research and policy interventions”. The project aims to build the capacity of Ugandans at a graduate level and link University programs more closely with rural communities, and research and development agencies making it an ideal partner for collaboration.

The Ministry is also encouraging smallholder farmers to contribute to the capital costs for water for production facilities through a public-private partnership arrangement, under which the Ministry of Water and Environment meets up to 62% of the construction cost and the farmers pay 38%. This partnership presents an opportunity for conservation organizations to highlight the need to protect forest corridors, and corridor species. In Hoima district, the communities are already co-funding the development of water withdrawal facilities. This is a legal requirement which commits communities to cost-share in the provision of water services. The water department, headed by the District Water Engineer is responsible of locating sites for water abstraction (e.g. shallow wells, springs, and boreholes) upon request from the lower local government authorities or community. Thus, the following application fee structure is published by the water resources department, that is, UGX 200,000 for borehole construction, UGX 100,000 for a spring or shallow well, and UGX 50,000 for a gravity flow scheme or rehabilitation of water facility. In addition, once the water source point is identified, the community or beneficiaries are tasked to secure and reserve at least half an acre of land around it. After the installation of the water supply facility, the community is entirely responsible for minor repairs and maintenance of the facility. To meet these conditions, the community constitutes a water committee that is responsible for community mobilization, collection of money to meet the maintenance costs, and conducts regular meetings concerning the water supply facility. These water supply committee structures present an opportunity to rally community support for riparian water protection.

The Nile Basin Initiative (NBI) is another potential source of funding for watershed protection in the Albert catchment area. The Nile Basin Initiative /Nile Equatorial Lakes (NEL) Subsidiary Action Program received funding from the World Bank Nile Basin Trust Fund (NBTF) towards identification and preparation of projects under NEL water resources development, and intend to apply part of the proceeds of this grant to make payments under a contract for consultancy services for a NEL Multi sector investment opportunity analysis of water resources development options. Among the sectoral options within the NEL region include navigation, irrigated agriculture, hydropower development, fisheries management, watershed management.

H. Projects that partners can learn from in choosing the institutional framework and design of effective PES schemes.

- 1) The “market Access for organic products” project being implemented by the government of Uganda and funded by International Federation of Organic Agriculture Movements (IFOAM), United Nations Conference on Trade and Development (UNCTAD), and Food and Agriculture Organization of United Nations. This project could provide lessons learned on how to mobilize and pay farmers for sustainably produced natural products;
- 2) Carbon sequestration and financing projects involving World Bank, ECOTRUST, UWA, FACE project certification and other implementing partners, and the World Bank/NFA/Nile Basin Re-afforestation/carbon projects will help to improve the carbon measurement, monitoring, and payment schemes design and implementation;

- 3) The Rwoho Forest Conservation Project could provide lessons for developing long-term forest-based economic enterprises;
- 4) The Mabira, and Budongo Forest Reserve ecotourism - lessons learned should be utilized to develop efficient community benefit schemes under the right terms for revenue sharing, and collaborative forest management;
- 5) UNDP's "Institutionalizing Payment for Ecosystem Services" global project being implemented by Forest Trends, Katoomba Group and other partners;
- 6) The REDD preparedness Plan coordinated by NFA could provide valuable learning lessons toward stakeholders collaborations and commitment to sustainable forest use and management;
- 7) The "Ecosystem services ProEcoServe and the Millennium Ecosystem Assessment" project funded by UNDP could provide valuable information on how to develop monitoring indicators and project performance monitoring methods to fully capture the bundle of ecosystem services provided by the ecosystems under consideration.
- 8) Mgahinga and Bwindi Conservation Trust.

Appendix 3 List of public, and private sector companies consulted, and contact persons

Name of organization/company	location and contacts	Tel contact	Resource person(s)	Email address	Meeting date
Private Companies					
Kinyara Sugar Uganda Limited	Plot 31, Block 9&10, Bujeje, P.O. Box 179, Masindi	+036600200 +256362600201	P.V. Ramadasan, General Manager Anantha, Estate Manager	ramadasanP@Kinyara.co.ug anantha@kinyara.co.ug	30/11/2010
Tea Companies					
Mwenge Tea Estates- Kisaru (Mcleod Russel (U) Ltd	P.O. Box 371 Fort Portal, Uganda	+256 382422391 +256382420000	Billy Singh, GM Plantations Onesimus Matsiko, HR Manager	bsingh@mcleodrussel.co.ug omatsiko@mcleodrussel.co.ug	3/12/2010
Mabale Growers Tea Factory	P. O. Box 354 Fort Portal, Uganda	+256483425078	Kyamulesire, A., General Manager Joseph Ayebazibwe, Environment Officer	mpangatea@iwayafrica.com jayebazibwe@mabaletea.com	3/12/2010
Mpanga Growers Tea Factory Ltd	P.O. Box 585, Fort Portal, Uganda	+256392722441	Siima Rogers, General Manager	siima@mpangatea.com	3/12/2010
Rwenzori Commodities, Mukwano Group of Companies					
Tooro and Mityana Tea Company (TAMTECO)	Plot 24A, Nakasero Road/P.O. Box 6641 Nakasero Road Kampala -	+256414259885	John Prinsloo, Technical Advisor	prinsloo@tamteco.com	3/12/2010
Uganda Sugarcane Technologist's Association (USCTA)	Plot 133/135 6 th Street Industrial Area. P.O. Box 33479 Kampala	+256414347498 0772422627	Richard Orr, Chairman USCTA Wilberforce Mubiru, Secretariat Manager	USCTA@utloline.co.ug	Potential partner
Tobacco Companies					
British American Tobacco Uganda Ltd (BATU)	Plot 69/71 Jinja Rd, P.O. Box 7100 Kampala	+256312200100	Seamus Gunton, Head of Growing	seamus_gunton@bat.com	29/11/ 2010
Uganda Tobacco Services Ltd	Kibaale Road, Kakumiro Town P.O. Box 70658 Kampala	+256772200211	Allan B. Katabazi, Zone Manager	bob_katabazi@yahoo.com	2/12/2010
Continental	Kibaale Town		Mwanje, National Manager Nicholas Njeru, Kibaale Zone Manager	0779528365	
Hydropower companies					
Hydromax Limited	Plot 32 Naguru Crescent, Bukoto P.O. Box 27027 Kampala	+256414567794 0772702715	Godfrey Sentumbwe, General Manager	Godfreysentumbwe_40@yahoo.co.uk	7/Dec 2010
Tullow Oil plc	Tullow Uganda Operations Pty Ltd Plot 15 Yusuf Lule Road P.O. Box 16644 Kampala	0776221069 0776221012 0414 564 000	Paul Coward, Environmental Standards Advisor Nahya Nkinzi, CSR Advisor	Paul.coward@tullowoil.com infouganda@tullowoil.com	
Total					Essential partner
Financial Institutions					
Commercial Banks					
Centenary Rural Development Bank Ltd	Talenta Hse, Plot 7 Entebbe Road, P.O.Box 1892 Kampala	+256-414347125	Stephen Nnawuba, Chief Manager Business Development and Marketing Ben Eyabu, Manager Product Development	stephen.nnawuba@centenarybank.co.ug ben.eyabu@centenarybank.co.ug	5/1/2011
Barclays Bank	Barclays House, Plot 2/4, Hannington Road P. O. Box 7101, Kampala	+256 312 218300	Michael Kaddu, Head Corporate Affairs	Micheal.kaddu@barclays.com	26/1/2011
Stanbic Bank	Stanbic Bank Uganda Limited 17 Hannington Road	0 41234710/11 0312 224 111/600	Nsibambi David, Public Relations Officer	nsibambid@stanbic.com	30/11/2010

	P O Box 7131 Kampala				
Post Bank	Post Bank Uganda Ltd, Plot 4/6 Nkrumah Road Kampala, P.O Box 7189 Kampala,		Alemi William Kenyi Manager Marketing & Sales	William.Alemi@postbank.co.ug	
Standard Chartered Bank Uganda Limited					Potential partner
Microfinance					
BRAC Uganda	Plot No. 90, Busingiri Zone, Off Entebbe Road, Nyanama, Kampala, PO Box 31817, Uganda	+256 703 598 724	Saiful Islam Khan, Financial Analyst M. Mozammel Huq, Programme Manager - Agricultural Extension	saiful.i@brac.net Mashuk_bau@yahoo.com	Potential partner
Association of Microfinance Institutions of Uganda (AMFIU)	AMFIU, P.O. Box 26056 Kampala	+25641259176	Benedict Brenke, Technical Advisor David Baguma, CEO	Benedikt.brenke@ded.de dbaguma@amfiu.org.ug	24/1/2011
Sawlog Production Grant Scheme (SPGS)	Plot 92 Luthuli Rise Avenue P. O. Box 5244, Kampala	+256312265332	Paul Jacovelli, Chief Technical Advisor	pauli@sawlog.ug	19/1/2011
Public sector (government agencies)					
National Water and Sewerage Corporation	Head Office: Plot 39 Jinja Rd, P.O. Box 7053 Kampala Hoima-Masindi Area: plot 13-17 Kampala Rd, P.O. Box 275 Hoima	25641431500 0465-40686	Okwir Nelson, Area Manager	nelsonokwir@yahoo.com	30/11/2010
UMEME	2nd Floor, Rwenzori House, Plot 1, Lumumba Avenue P.O. Box 23841, Kampala Uganda	0312 360 647 0312360615	Sam Zimbe, General Manager Corporate and Regulatory Affairs Charlotte Kemigisha, Corporate Communications Manager	Sam.zimbe@umeme.co.ug charlotte.kemigisha@umeme.co.ug	8 February 2011
Electricity Regulatory Authority	Electricity Regulatory Authority ERA House Plot 15 Shimon Road, Nakasero P.O. Box 10332 Kampala	+256 41 341852/646, +256 312 260166 Fax: +256 41 341624	Benon Mutambi, CEO	Email: era@africaonline.co.ug	8 February 2011
Directorate of Water Resources Management, Ministry of Water and Environment	Plot 17 Mpigi Road, P.O. Box 19 Entebbe		Dr. Callist Tindimugaya, Commissioner (Water Resources Regulation)	callist.tindimuguya@mwe.go.ug	20/12/2010
Kyenjonjo District, Water Office	P.O. Box 1002, Kyenjonjo	0701618393	Tusiime Ismail, Senior Water Officer	lsmaitu2004@yahoo.com	2/12/2010
Telephone companies (MTN, UTL, WARID, & Orange)					Essential partners
Uganda National Road Authority	Plot 5, Lourdel Road, Nakasero, P.O. Box 28487 Kampala	+256 312 233 100; +256 414 318 000	Eng. Peter Ssebanakitta, Executive Director.	roadinfo@unra.go.ug executive@unra.go.ug	Essential partner
Municipalities/towns					
Masindi District Local Government			Magezi, District Planner		30/11/2010
Hoima District Local Government			Iremia Walter, CAO		1/12/2010
Kibale District Local Government		0779094830 0782905157	Danstan Balaba, CAO Vicent Kyaligonza, Deputy/CAO		2/12/2010
Kyenjonjo District Local Government	P.O. Box 1002, Kyenjonjo	+256382275334 0701566539	Peter Ruhweeza, Deputy/CAO	pruhweeza@yahoo.com	2/12/2010