



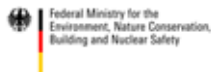
# BIODIVERSITY FINANCING IN UGANDA: POLICY AND INSTITUTIONAL REVIEW



MAY 2017



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## FOREWORD

The Policy and Institutional Review (PIR) was undertaken as part of the Uganda's development of a Biodiversity Finance Plan supported by the Biodiversity Initiative (BIOFIN) project. The BIOFIN project is a global partnership seeking to address the biodiversity finance challenge in a comprehensive and systematic manner. It was launched by the

United Nations Development Programme (UNDP) in October 2012 with financial support from the European Union (EU), Government of Germany, Switzerland and Norway through UNDP. The aim of the initiative is to enable governments to construct a sound business case for increasing investment in the sustainable and equitable management, protection and restoration of biodiversity and ecosystems. BIOFIN was implemented by the National Environment Management Authority (NEMA) on behalf of the Government of Uganda (GOU)

Generally, the trends of biodiversity highlighted in the PIR report point to declines in forest cover, wetland cover, and increasing pressure on water resources and water catchments. The natural resources in protected areas mainly national parks, wildlife reserves and to some extent central forest reserves suffered much less degradation compared to the natural resources on private land. The major drivers for degradation are high woody biomass energy demand, agriculture, settlements and infrastructure development, coupled with inadequacy in implementation, compliance and enforcement. The evolution of institutional arrangements in biodiversity management and financing was mirrored by the evolution in policy and institutional reforms for environmental and natural resource management, forestry management, wildlife management and water resources management. The National Environment Action Plan (NEAP) had envisaged an umbrella arrangement for all biodiversity management activities with NEMA providing coordination for lead agencies and district local governments specifically charged with management of environment and natural resources. In the case of biodiversity, the National Biodiversity Strategy and Action (NBSAP) provide a framework for biodiversity management in Uganda. NEMA is responsible for the development of NBSAP (in consultation with relevant stakeholders) as well as coordinating its implementation on behalf of Government. The NBSAP brings together stakeholders to agree on priority actions for biodiversity management taking account

Although the NBSAP brings together actors to agree on priority actions for biodiversity management the PIR shows that financial resources mobilised for biodiversity management are inadequate and, many times, not efficiently or effectively utilised. The distribution of benefits from the current state of biodiversity management points to major welfare and economic impacts on households resulting from high deforestation, wetland degradation, low soil fertility, reduction in capture fisheries, reduced water quality. The high demand and over dependency on biomass energy and land for agriculture, low agricultural productivity and wetland conversion were the main direct drivers of biodiversity loss.

Communities with a high dependence on the environment and natural resources and those that live adjacent to the critical ecosystems are the major losers from the loss of biodiversity. Disproportionate profits are made by traders and urban consumers who benefit from unregulated harvest of forestry, wetland and other natural resources to attain high volumes of sale, and cheap ecosystem goods and service, respectively. Provision of adequate biodiversity finance that is efficiently and effectively utilized is critical for maintaining the integrity, productivity and sustainable use of biodiversity and the associated ecosystem services.

Implementation of the recommendations from PIR including sector level strategic environment

assessments, improved implementation of financing mechanisms, forest and wetland ecosystem restoration, catchment management and institutional capacity building for environment and natural resource management especially at sub-national level will go a long way in supporting implementation of the NBSAP. The findings of the PIR has also been used to inform and guide the development of the Biodiversity Finance Plan. The Biodiversity Finance Plan is a publication under the BIOFIN project. I encourage stakeholders to use it in planning for resource mobilization for biodiversity conservation and management.



Dr. Tom .O. Okurut

**EXECUTIVE DIRECTOR**

**NATIONAL ENVIRONMENTAL MANAGEMENT AUTHORITY**





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Buikwe District Local Government

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Department of Forestry, Biodiversity and Tourism, Makerere University

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Ministry of Finance, Planning and Economic Development (MoFPED)

Ministry of Energy and Mineral Development

Ministry of Tourism, Wildlife and Antiquities (MTWA)

Ministry of Water and Environment (MWE)

Mukono District Local Government

National Agricultural Research Organization (NARO)

National Animal Genetic Resources Centre and Data Bank (NAGRC&DB)

National Fisheries Resources Research Institute (NaFIRRI)

National Forestry Authority (NFA)

National Planning Authority (NPA)

Nature Uganda

Oyam District Local Government

Plant Genetic Resource Centre, Entebbe

Rhino Fund Uganda

The Technical Committee on Biodiversity Conservation

## Total E&P Uganda

Uganda Bureau of Statistics (UBOS)  
Uganda Export Promotion Board (UEPB)  
Uganda National Council for Science and Technology (UNCST)  
United Nations Development Programme (UNDP)  
Uganda Wildlife Authority (UWA)  
Uganda Wildlife Conservation Education Centre (UWCEC)  
Wakiso District Local Government  
Wetlands Management Department (WMD)  
Wildlife Conservation Society (WCS)  
World Wide Fund for the Conservation of Nature (WWF)

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## ABBREVIATIONS AND ACRONYMS

<b>APE</b>	Action Program for Environment
<b>ARIS</b>	Agricultural Research Information Service Unit
<b>BAU</b>	Business As Usual
<b>BINP</b>	Bwindi Impenetrable National Park
<b>BMCT</b>	Bwindi Mgahinga Conservation Trust
<b>BMU</b>	Beach Management Units
<b>CBD</b>	Convention on Biological Diversity
<b>CbWRM</b>	Catchment based Integrated Water Resources Management
<b>CDO</b>	Cotton Development Organisation
<b>CFM</b>	Collaborative forest management
<b>CHM</b>	Clearing House Mechanism
<b>DDA</b>	Dairy Development Authority
<b>DEAPs</b>	District Environment Action Plans
<b>DECs</b>	District Environment Committees
<b>DFS</b>	District Forest Service
<b>DJM</b>	Dual-Joint Management
<b>DWD</b>	Directorate for Water Development
<b>DWRM</b>	Directorate of Water Resources Management
<b>ECOTRUST</b>	Environment Conservation Trust
<b>EMCBP</b>	Environmental Capacity Building Project
<b>ERA</b>	Electricity Regulatory Authority
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organisation
<b>FSSD</b>	Forestry Sector Support Department
<b>GKMA</b>	Greater Kampala Metropolitan Area
<b>GoU</b>	Government of Uganda
<b>ICDPs</b>	Integrated Conservation and Development Projects
<b>IMB</b>	Inner Murchison Bay
<b>IUCN</b>	International Union for Conservation of Nature
<b>IWRM</b>	Integrated Water Resources Management
<b>KCCL</b>	Kasese Cobalt Company Ltd
<b>MAAIF</b>	Ministry of Agriculture, Animal Industry and Fisheries
<b>MAFAP</b>	Monitoring and Analysing Food and Agricultural Policies
<b>MDA</b>	Ministries Departments and Agencies
<b>MDGs</b>	Millennium Development Goals
<b>MEAs</b>	Multilateral Environmental Agreements
<b>MEMD</b>	Ministry of Energy and Mineral Development
<b>MFNP</b>	Murchison Falls National Park
<b>MoES</b>	Ministry of Education and Sports
<b>MoLG</b>	Ministry of Local Government
<b>MTIC</b>	Ministry of Trade Industry and Cooperatives
<b>MTWA</b>	Ministry of Tourism Wildlife and Antiquities
<b>MWE</b>	Ministry of Water and Environment
<b>MWLE</b>	Ministry of Water, Lands and Environment
<b>NAADS</b>	National Agricultural Advisory Services
<b>NaFORRI</b>	National Forestry Resources Research Institute

<b>NAGRC&amp;DB</b>	National Animal Genetic Resources Centre and Database
<b>NaLIRRI</b>	National Livestock Resources Research Institute
<b>NAMAs</b>	Nationally Appropriate Mitigation Actions
<b>NAPA</b>	National Adaptation Plans of Action
<b>NARS</b>	National Agricultural Research Systems
<b>NBEST</b>	National Biomass Energy Strategy
<b>NBSAP</b>	National Biodiversity Strategy and Action Plan
<b>NDP</b>	National Development Plan
<b>NEAP</b>	National Environmental Action Plans
<b>NEMA</b>	National Environment Management Authority
<b>NWSC</b>	National Water and Sewerage Corporation
<b>PGRC</b>	Plant Genetic Resource Centre
<b>QENP</b>	Queen Elizabeth National Park
<b>SBSTTA</b>	Subsidiary Body on Scientific Technical and Technological Advice
<b>SDG</b>	Sustainable Development Goals
<b>SEA</b>	Strategic Environment Assessment
<b>SIP</b>	Sector Investment Plan
<b>SLM</b>	Sustainable Land Management
<b>SPGS</b>	Sawlog Production Grant Scheme
<b>TSC</b>	Technical Steering Committee
<b>UCDA</b>	Coffee Development Authority
<b>UNCCD</b>	United Nations Convention on Combatting Desertification
<b>UNCED</b>	United Nations Convention on Environment and Development
<b>UNCST</b>	Uganda National Council of Science and Technology
<b>UNDP</b>	United Nations Development Programme
<b>UNDP-CO</b>	United Nations Development Programme-Country Office
<b>UNGB</b>	Uganda National Gene Bank
<b>UNPEI</b>	United Nations Poverty Environment Initiative
<b>UNRA</b>	Uganda National Roads Authority
<b>USAID</b>	United States Agency for International Development
<b>UTB</b>	Uganda Tourist Board
<b>UWA</b>	Uganda Wildlife Authority
<b>UWEC</b>	Uganda Wildlife Education Centre
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<b>WCS</b>	Wildlife Conservation Society
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<b>UWRTI</b>	Uganda Wildlife Research And Training Institute
<b>WCS</b>	Wildlife Conservation Society
<b>WMZs</b>	Water Management Zones

## EXECUTIVE SUMMARY

### Setting for BIOFIN in Uganda

The Government of Uganda (GoU) through the National Environment Management Authority (NEMA) with support of the EU, Government of Germany, Switzerland, and Norway through United Nations Development Programme (UNDP) is implementing the Biodiversity Finance Initiative (BIOFIN) in Uganda. BIOFIN is a global partnership seeking to address the biodiversity finance challenge in a comprehensive and systematic manner. The aim of the initiative is to enable governments to construct a sound business case for increasing investment in the sustainable and equitable management, protection and restoration of biodiversity and ecosystems.

Uganda is a Party to the Convention on Biological Diversity has committed to contribute to implementation of the “Strategic Plan for Biodiversity 2011-2020” and the 20 Aichi Targets. Target 20 states that by 2020, at the latest, Parties will have developed a strategy for mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020. At the national level, the first National Biodiversity Strategy and Action Plan (NBSAP) and the second NBSAP (NBSAPII), explicitly indicated how low financing and dependency on donor funding was unsustainable and inadequate to lead to achieve the country’s biodiversity management targets. Alongside financing challenges, the other leading challenges to implementing biodiversity management in Uganda is inadequate capacity knowledge and awareness among key implementing partners and the general public, among others. The second main challenge highlights institutional challenges for biodiversity management.

The BIOFIN initiative works along two principal axes: (i) the globally-led development of a new methodological assessment framework; and (ii) adaptation and implementation of this new methodological framework at national level. The work on adaptation and implementation of the new methodological framework at national level is led by NEMA in cooperation with the Ministry of Finance, Planning and Economic Development (MFPED), with support from the UNDP Country Office, and comprises of: (i) the policy and institutional review; (ii) the biodiversity expenditure review and finance needs assessment; (iii) developing a comprehensive national biodiversity finance plan; and (iv) initiating implementation of the Biodiversity Finance Plan at national level.

### Policy Review

The objectives of the policy review were to: (i) describe the perspective of national development plans towards biodiversity conservation finance; (ii) review the status and trends of biodiversity; (iii) review economic sectors, describe their associated negative and positive biodiversity and ecosystem trends; (iv) review sector policies, and practices; and describe financial and economic drivers of biodiversity trends by sector.

### Biodiversity Policy and Practice

Uganda’s National Constitution (1995) contextualises the importance of biodiversity management under article 27 which states that natural resources are to be managed and utilized in a sustainable manner and the state would take all possible measures to prevent or minimize damage and destruction to environment resulting from pollution and other causes. The state is mandated to create and develop parks, reserves and recreation areas and ensure conservation of natural resources and promote rational use to safeguard and protect the country’s biodiversity. The strategic objective for biodiversity management is articulated in the NBSAPII while biodiversity regulation and policy is implemented through sectoral policies

and laws. The core component of the policy comprises the National Environment Policy (1994), the Uganda Wildlife Policy (2014), the National Forestry Policy (2001), the National Wetlands Policy (1995), and the National Agriculture Policy (2013), among others. Ministries, Departments and Agencies (MDAs) then provide leadership for biodiversity management. The core sites of biodiversity management are: Water and Environment; Agriculture; Tourism, Wildlife and Antiquities; Energy and Mineral Development; and Works and Transport Sectors.

The policy review identified the key indirect drivers for biodiversity management in the country as:

- (i) One of the major limitations to economic growth in Uganda has been highlighted as low productivity of core natural resources sectors including agriculture and fisheries (MFPED 2015). Therefore, the major cause of land use change between 1990 and 2015 was due to agricultural land expansion on smallholder subsistence land holdings (UBOS 2015).
  - (ii) The low productivity is also compounded by poorly developed commodity value chains where the highest proportion of value captured nationally is for primary production and processing. The technology options for processing of grain, oil seed and other agricultural produce are concentrated in the major urban centres due to the absence of utilities in the rural areas. The inequitable distribution and low benefits also encourage extensive harvesting of natural resources and limited re-investment to enhance productivity of the resource base.
  - (iii) Pressure for economic growth has hastened investment into infrastructure, renewable and non-renewable energy options. The strategic planning of harvesting of ecosystems/ ecosystem services has not been adequately integrated into national biodiversity management plans. From time to time, key infrastructure projects are initiated when the appropriate environmental compliance activities are not yet complete. Late environmental compliance interventions lead to sub-optimal biodiversity management efforts.
  - (iv) Expansion in urbanization and industrialisation exert pressure on peri-urban forests, wetlands and urban centres. Whereas Uganda has a low urbanisation of about 18%, the rate of urbanisation is already above 6% per annum and over the next 15 to 25 years the urban dwellers are expected to soar to nearly 40% (MWE 2015).
  - (v) Uganda's population growth rate of 3.2% is one of the highest in the world (UBOS 2014). Studies from national development planning have suggested that a 2.4% rate of growth would be sustainable. The high population density and high dependence on natural resources, i.e. over 70% of livelihoods in agriculture, at least 5% in fisheries and wood based industry creates immense pressure on ecosystems (GOU/NPA 2013). Over 80% of Uganda's population is based in rural areas where very few alternative livelihoods exist outside of agriculture, forestry and fisheries. The future prospects on population pressure also point to increased pressure as nearly 50% of the country's population is under 15 years (GOU/NPA 2015).
  - (vi) Low environmental compliance seems to stem from increased number and size of projects that have major impacts on biodiversity. Large projects such as hydropower dams, urban settlements, road works, large scale farms and oil and gas investments
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have large cumulative and long lasting impacts. The concerns are that the biodiversity conservation could be traded-off for the drive for faster economic development. Adequately addressing these compliance concerns requires more efficient and cost-effective approaches and response mechanisms to enhance compliance.

- (vii) Climate variability, climate change and other natural impacts. Climate variability especially in fragile mountain ecosystems, wetlands and rangeland areas results in heavy degradation occurring very quickly. The low resilience to climate change and other forms of disaster means that innovative and traditional means of production are lost and unsustainable harvest of natural resources is the fastest recourse. The highest vulnerability has been observed in the rangeland cattle corridor, especially in northern and north western Uganda where the poorest people in the country live. Mountain ecosystems such as Mt. Elgon and Mt. Rwenzori have dense populations and important biodiversity in national parks and forest reserves that are constantly under threat of encroachment from neighbouring communities whose major source of livelihood is increased agricultural production and/or felling of trees for timber and wood fuel.

## **Direct/sector based drivers**

### **1. Forestry**

In terms of ecosystems, the high rate of deforestation topping 5% annum is a major challenge (UBOS 2015). The factors show that fuel wood , especially charcoal and fire wood, and forest land use change for agriculture, settlements, urban centres are the major direct drives. Fuel wood is the major source of energy for domestic use and industry in the country. The greatest challenges for wood fuel are related to the extreme inefficiency i.e. one sixth of wood is converted to charcoal; even though technologies exist where 40% of the wood could be recovered (MEMD 2014).

### **2. Wetlands**

Similar to forest ecosystems, wetlands also suffer leakage from other economic livelihood activities, rural urban migration, dry season farming, and public land access especially in urban and peri-urban areas. Non-compliance in the management non-point source pollution and manageable pollution from industries has led to increased dumping of pollutants in urban wetlands. On the other hand rural wetlands often have use rights and the major pressure is land use change for agriculture, crop production including paddy rice or livestock production.

### **3. Agriculture policy**

The agricultural policy of Uganda and its implementation has suffered considerable disruption. Because agriculture is the major sector in the economy, there have been several efforts to create lasting extension system; that allows famers to access high quality inputs and increase productivity. However, the lack of consistency has caused considerable disruption. Even where government has made attempts to create long term plans, medium term socio-economic targets have often caused a change, such as the case of the Plan for Modernisation of Agriculture (PMA) where the sustainable natural resource management components in the programme were abandoned leading

to unsustainable biodiversity use.

#### **4. Crop production**

Agriculture continues to be the major source of employment in Uganda. According to the 2008/9 agricultural crop census (UBOS/MAAIF 2008), Uganda has 3.95 million agricultural households. The total number of people living in agricultural households at that time was 19.3 million people. As the population continues to grow at a rate of just over 3% the population of agricultural households also grows and pressure to maintain the same level of ecosystem services supply in the subsistence agricultural farms also grows.

#### **5. Livestock production**

Driver of biodiversity loss associated with livestock production is the large concentration of cattle in the fragile and climate vulnerable rangelands of the cattle corridor. The cattle corridor districts contain 55% and 42% of the indigenous and exotic cattle respectively, 42% of sheep and goats, 36% of the pigs and 38% of the poultry flock. Some 60% of households in the corridor are livestock keepers, compared to 22% nationally (UBOS 2008; UBOS 2015). The districts of the corridor are some of the poorest in the country with considerable disadvantage in access to basic social services such as schools, clinics, sanitation. The absence of commodity markets, agricultural extension support and any efforts to increase the productivity of the rangelands leads to the unsustainability of the systems.

#### **6. Fisheries**

Fisheries management falls under the National Fisheries Policy 2004. The fisheries industry is largely artisanal and is based on inland capture fisheries from the rich water resources that cover about 18% of the country's total surface area. About 2.5% of Gross Domestic Product (GDP) and 12% of agricultural GDP comes from fish; and the sector supports the livelihoods of nearly 5.3 million people including youth and women through direct involvement in fishing, fish processing and trading. Fish are a major source of animal protein with fish consumption estimated at about 10 kg/ capita – slightly below the recommended WHO level of 12.5 kg/capita (NEMA 2012). The high fishing effort, pollution especially in catchments next to urban areas and illegal fishing activities as well as poor estimation of fishing effort at the national level have been responsible for the excessive losses in capture fisheries. Poor regulation of fish farming sub-sector is also a key concern.

#### **7. Tourism, Trade and Industry sector drivers**

National Parks and Wildlife Reserves (protected areas) are the major habitats for Uganda's wildlife and contribute considerably to the country's tourism revenue. These protected areas are under pressure for land conversion from agricultural land use, infrastructure development (energy and road infrastructure) and mineral resource development. The improved land use planning and strategic land plans that minimise loss of biodiversity is a major finding of the policy review.

Trade sub-sector interaction with biodiversity management is through local supply

chains for crop and livestock produce, biomass energy, and other value chains of natural resources that are based on natural resource management. In agricultural crop production losses affecting biodiversity are mainly through soil fertility nutrient transfers of bulk crop harvest and transfer of crop residues that accumulate as waste in urban areas. Low productivity that is associated with poor agricultural practice leads to pressure for land expansion to attain adequate output to meet their welfare. Biomass is transferred in wood fuel trade between rural areas and urban areas. Even though international trade plays a part in biodiversity loss the proportion of international trade to domestic trade is quite small (World Bank 2013).

The industry sub-sector interactions with biodiversity management through use of raw materials from agriculture, minerals that are processed into consumed or other traded products. There are considerable wastewater and solid waste management problems in urban areas associated with poor management of waste lead to pollution into surface water systems and on the ground (MWE 2015). The industrial sector also contributes to the loss of biomass through the demand of wood fuel for energy.

## **8. Energy resources**

### **8a. Biomass**

Uganda's growing population relies on biomass fuel for domestic cooking, institutional and industrial heating. The Energy Policy (2002) and the subsequent Renewable Energy Policy (2007) realised the high dependence and sought to improve efficiency and increase electricity production. However, this process has been very slow. The high dependence on wood fuel has been compounded by the poor conversion efficiency of traditional charcoal stoves whose efficiency is only one-sixth of best available technology. While the rural communities depend on firewood, the burgeoning urban population which currently stands at 15 to 18% of the national population and is expected to reach 45% by 2050 mostly depends on the inefficiently produced charcoal (MWE 2016). The high demand for wood fuel and poor charcoal kiln conversion technology is currently the leading cause of deforestation, having replaced conversion for agriculture and other land uses (UBOS 2015). The need to urgently address the high consumption of biomass for energy is the most immediate biodiversity conservation concern for the forestry sub-sector.

### **8b. Hydropower**

Hydropower generation is considered non-consumptive use of water resources. However, the high priority of hydropower projects and the location of hydropower potential along critical ecosystems means that hydropower development and maintenance of the facilities has long-term impacts on ecosystems and ecosystem services. Uganda's major hydropower projects are located along the River Nile while several other medium size and small hydropower projects and potential are located on rivers in Mountain ecosystems especially in Mt. Rwenzori but also Mt. Elgon and some parts of northern Uganda. Dam construction may sometimes involve diversion of water, loss of access to sections of the river for communities and tourists, loss of access to economic activities such as fish landing sites, rapids and falls for recreation and sport. In some cases also, construction of dams may lead directly (i.e design of water flow to maximise hydropower production) and/or indirectly (i.e. encouraging settlement) to encroachment of important ecosystems e.g. the Mabira central forest reserve and Murchison Falls National Park, among others.



When losses to biodiversity conservation are envisaged or do occur it is important that adequate management and compliance measures are in place to minimise long-term impacts at design level through selection of appropriate options at design and development. In the medium to long-term continued compliance monitoring and evaluation and enforcement can support biodiversity management.

## 9. Minerals & petroleum

In 2006, the Government of Uganda announced that it had discovered commercial quantities of crude oil and gas in the Albertine Rift, and sought to develop the resource for export. Alongside the development of the oil and gas resources were efforts to ensure that the exploitation of the resources can be done without causing major environmental damage. The mining sector throughout the country is a major one with considerable land take and pollution impacts.

Uganda's Minerals Policy (2000), the Mining Act (2003) and the Mining Regulations (2004) have cohesive actions for biodiversity management such as a requirement for EIA and public engagement in the process, the use of exploration licenses and mining leases which provide for community participation. Still, there are major weaknesses in terms of limited capacity to implement the laws and regulations, the pervasive weakness of the regulatory environment, the inadequacy of the law in addressing mining closures and the lack of financial resources to cater for subsequent environmental management actions. The royalties and taxes paid often do not reach the communities in practice, and there are no long term plans to help improve welfare of affected communities.

## 10. Works and Transport sector drivers

Economic pressures: the need for infrastructure in Uganda is important as Uganda lost too many years to political turmoil and economic reversals. Many times the pressure for expedience has led to poor environmental compliance. Due diligence for environmental compliance has many times been compromised as projects are fast tracked. Increasing pressure for use of public land for infrastructure also affects wetlands and forest areas and there are no adequate instruments for compensation and/or mitigation of these losses. However, the ongoing revisions of the National Environment Act are making an attempt to address these.

The built up areas in Uganda increased 10-fold between 2000 and 2010. This is associated with the huge growth in real estate and settlements in and around urban and peri-urban areas, which has created a housing industry boom. However a lot of this growth is poorly regulated (MWE 2016). Therefore, the conversion of wetlands and forest areas and use of fragile lake shore and major wetland areas for housing purposes has continued to occur.

### Biodiversity State and Trends

The state and trends of biodiversity were characterised in terms of the ecosystems, species and genetic diversity. The most common categorisation for biodiversity management in Uganda is based on ecosystems. The key ecosystems are; forests, agro-ecosystems, national parks and wildlife reserves, and wetlands. The highest proportion of national biodiversity is in the national parks, wildlife reserves and forests. For this reason, all national parks and wildlife reserves are gazetted as protected areas while 506 central

forest reserves also exist. At the sub-national level local forest reserves were created but their land use has changed considerably due to political interference. Local politicians usually offer concessions to crop farmers and herdsman to enhance livelihood often at the expense of forest management.

Therefore in terms of forest cover and management, by 2010, about 64% of the country's forest cover was on private land, 17% in National Parks and wildlife reserves, 18% in central forest reserves and less than 1% in local forest reserves (UBOS 2014). The major change in ecosystem cover is occurring in forest land. More than 2.3 million ha, just under 50% of the country's forest cover, was lost between 1990 and 2010. Estimates for 2015 showed that the forest cover declined further to 1.92 million ha, which is a 57% decline since 1990. Deforestation is a very high priority concern nationally and for the NBSAPs and subsequently the National Biodiversity Finance Plan. Uganda with support of development partners is expecting the Reduced Emissions from Deforestation and forest Degradation (REDD+) programme, implementing the Sawlog Production Grant Scheme (SPGS), and encouraging forest plantation through District Local Governments, NGOs, and religious institutions among others.

The current tree planting programmes are far small and severely outstripped by demand. It is estimated that between 20,000 and 30,000ha of forested area are planted per year while the deforestation rate is in excess of 90,000ha/year (NFA 2015). Therefore, the integrated approach has to include either increased forest production as well as slowing down demand and/or creating options to slow down demand, particularly through renewable energy technologies.

Agro-biodiversity in Uganda has generally remained static for several decades. Subsistence agriculture with low soil fertility, heavy soil mining, low quality seed dominates the food crop production subsector. Commercial crops such as coffee and tea are still important financially but largely concentrated in a small number of farmers between 500,000 and 700,000 farmers (MFPED 2015). The remaining farm households, out of over 3.95 million households, are largely engaged in subsistence agriculture. Only between 1-5% of Ugandan farmers are commercial scale farmers (World Bank 2015).

The large number of subsistence farmers has often meant mainstream government supported programmes are dormant. These include the National Agricultural Advisory Services (NAADS) which started out as an extension programme with pilot activities for improved seed materials and training and has now formulated toward input supply only. The national agricultural plan (the PMA) was largely halted and NAADS, one of the programmes under it promoted instead. A number of the biodiversity management ideas advocated under PMA are largely missing in the NAADS programme. Another ongoing review of the agricultural implementation plan, is seeking to enhance agricultural extension without necessarily listing earlier proposals on sustainable natural resources management.

Uganda's wetland ecosystem declined from 13% in 1995 to under 9% by 2010 (UBOS 2014). The significance of this change is observable in the large scale losses of urban wetlands in the Greater Kampala Metropolitan Area (GKMA), and other major urban centres such as Jinja, Mbarara, Mbale, Lira and Gulu Municipalities, among others. The loss of wetlands has increased pollution pressure on surface water systems especially in Kampala. Kampala suffers heavy pollution from industries in part because the Nakivubo and other wetlands that support effluent treatment have been converted for settlements



and been encroached upon by urban migrants (MWE 2016). Wetland management and restoration is currently a major priority for the Government with a task force set up for the GKMA and the Wetland Management Department (WMD) is extending these efforts to wetlands in Western and Eastern Uganda, where land use change for agriculture is a major concern.

Uganda's rangelands carry over 60% of the country's livestock stock in the cattle corridor. The other important characteristic of the rangelands especially the semi and zoned are unique biodiversity of the shear butter tree, germ Arabica, wood lands, farmlands and bush lands. The declining resources on the large lands are associated with low adoptive capacity to climate change, pressure for charcoal production and population pressure on the low productive available resources. Uganda is biodiversity rich, and the country ranks among the top 10 most bio-diverse countries in the world. About 55% of the world's population (800) of Mountain Gorillas is found in Uganda (GoU 2014). The country is home to 11% (1057 species) of the world's recorded species of birds, 7.8% (345 species) of the global mammal diversity, 19% (86 species) of Africa's amphibian species diversity and 14% (142 species) of Africa's reptile species, and 1,249 recorded species of butterflies and 600 species of fish (NEMA 2015). The country's flora population covers seven of Africa's 18 plant kingdoms, more than any African country (NEMA 2015)

There are 30 species of antelope, 24 species of primates including the charismatic Mountain Gorillas and Chimpanzees, and more than 5,406 species of plants so far recorded, of which 30 species of plants are known to be endemic to Uganda. Currently Uganda has several species listed in the IUCN Red List, 2013; which include 183 plants, 25 mammals, 22 birds, 6 amphibians, 61 fishes, 9 molluscs and 12 other invertebrates.

Trends of wildlife species diversity was collaborated based the Uganda wildlife census that indicated increases for some wildlife species populations particularly Burchell's Zebra, Impalas and the Uganda Kob between 2007 and 2010 (MTWA 2014). Conversely, there have been notable declines of some wildlife species populations. There were in wildlife species population of Buffalos, elephants, hippopotamuses, lions and some zebras in Lake Mburo National Park, Queen Elizabeth National Park, Murchison Falls National Park and Kidepo Valley National Park. There is poaching in some parks and very limited research prevents a clear understanding of the reasons for stagnant and in some cases declining wildlife population.

The fish species diversity in Uganda is dominated by the Cichlid family consisting of 324 species, of which 292 are endemic to Lake Victoria. Another 42 fish species (non-cichlid) are spread throughout aquatic resources with 15 of those endemic to Lake Victoria. Whereas, there are 600 other species found in the major fisheries in Uganda – the main commercial species are Nile Perch (*Late nilotica*) from all the major lakes except Edward and George. The small Nile Perch *Lates macroplathalnus* (from L. Albert); Nile Tilapia (*Oreochromic niloticin*) from all major water bodies; Mukene (*Rastreneobola argentea*) from the Victoria and Kyoga basin lakes; Muziri (*Neobola bredoi*) of L. Albert; cat fish (*Clarias garie pinus*); silver catfish (*Bagnus docmad*) from all major water, Lung fish (*Protoptenu aethiopias*) are also common in all water bodies (NEMA 2015).

More than 80% of Ugandans depend on indigenous medicines which are less costly and more accessible than allopathic medicines (NEMA 2015). Despite the importance

of medicinal plants, about 1% of the 250,000 species of higher plants known to have medicinal value have had their biomedical potential determined. Therefore, a lot of plant species with medicinal value have been allowed to disappear together with associated knowledge and practice. The causes of disappearance include habitat loss to unsustainable harvesting and land use change.

Pollinators have an important role in maintaining agricultural production. The most recognized pollinators are various species of bees, butterflies, moths, wasps and bats, birds especially the humming birds, honey eaters and sun birds (GoU/NEMA 2015). The presence of forest patches in fringe zones of agricultural matrices was found to diversify bee and butterfly communities delivering pollination services in nearby agricultural fields (Munyuli 2011). In Uganda's coffee- banana farming system for instance, bees contribute over 60% of the pollination of coffee (coffee Robusta). During 2007, the mean economic value from Robusta coffee in the coffee-banana farming system was US\$ 214 million, 62% of which is attributed to the contribution of bee pollinators (Munyuli 2011).

Uganda has 1,057 bird species, 11% of the world's total. However, 15 of the bird species are endangered and another 11 are "vulnerable." Additional research is being conducted on status of other bird species. There are now 34 Important Bird Areas (IBA) in Uganda. Of these, 22 are within the national protected areas system i.e. a Forest Reserve, National Park or Wildlife Reserve. 11 sites are unprotected, of which nine are designated as Ramsar sites. In fact, all the twelve Ramsar sites in Uganda are IBAs (WMD/NU 2008). The bird diversity in Uganda is a result of the location of Uganda on the confluence of major vegetation zones at the heart of the continent and good climate conditions. The threatened species include; the Shoebill, Grey Crowned Crane, Lesser Flamingo, Great Snipe and African Skimmer all of which are declining in Uganda (GOU/NEMA 2014).

## **Institutional Review**

The objectives of the institutional review were to: (i) review and describe key finance actors and stakeholders, their roles and responsibilities in biodiversity finance; (ii) review and describe institutional arrangements and dimensions in biodiversity finance; (iii) describe the distribution of benefits and costs of the biodiversity trends; and (iv) review and describe capacities and capacity needs.

### **Status of public management for biodiversity management**

Public sector institutional arrangements are defined by institutional mandates based on legislation and execution of mandates as articulated in national plans and programmes. The GoU implements a comprehensive national development planning framework comprised of the long term strategic plan, the 30 year vision (vision 2040), five year National development plans (NDPs), sector investment plans (SIPs), usually set for 10 years, 5 year local government development plans, annual work plans and the annual national and sector budgets.

The core institutional structure for biodiversity conservation is elaborated both by sector and the national coordination mechanism. Starting with the national coordination mechanism, the National Environment Act cap 153 made the National Environment Management Authority (NEMA) the coordinating agency on biodiversity management. The implementation of the coordination for management of biodiversity is a fulfilment

of the aspirations of the National Constitution. Under the National Objectives and Directive Principles of State Policy on environment the National Constitution committed that the State, including local governments, shall – (a) create and develop parks, reserves and recreation areas and ensure the conservation of natural resources; and (b) promote the rational use of natural resources so as to safeguard and protect the biodiversity of Uganda. Even though the coordination is centred at NEMA-Uganda, a decentralised coordination arrangement has allowed for subdivision of leadership with other MDAs including the Ministry of Finance Planning and Economic Development (MFPED) on resource mobilisation, Makerere University on taxonomy, Uganda Wildlife Authority (UWA) on protected areas management, and National Agricultural Research Organisation (NARO) on biosafety and biotechnology.

The decentralised arrangements for biodiversity management are generally managed through the Water and Environment sector, Agriculture sector, and tourism sector. The obligations of other MDA at the central government level are generally towards developing and supporting compliance and enforcement actions. The implementation of activities is dominated by the sub-national governments, the District Local Governments (DLGs). The sub-national arrangements includes cities (e.g. Kampala City), Municipalities and Town Councils as urban authorities while sub-counties are the lower local governments under the (DLGs), it should be noted that municipalities and town councils also operate under the DLGs even though they have a lot more autonomy than sub-counties. The implementation of forest management on private land and on local forest reserves, wetland management and water resources management actions as well as support on agro-ecosystem management, management of mountain ecosystems, and lake and river shores is through the local government system supported by the MDAs which are at the national level.

The core environmental management system set up under the National Environment Action Plan had envisaged that NEMA would coordinate all environment and natural resources management actions to ensure, among others, sustainable biodiversity management (GoU 1995). However, during the implementation of NEAP additional reforms emerged and subsequent government institutional re-alignment led to considerable reduction in central coordination for biodiversity management. The new MDAs created included the wildlife authority (UWA), forestry authority (NFA) and creation of a District Forestry Service in charge of forests on private land and in local forest reserves, re-invigorating of the directorate for environmental affairs (DEA) at the Ministry of Water and Environment with an Environmental Department, a wetland department and a climate change department, the Land sub-component was restructured towards another sector the Lands, Housing and Urban Development sector. Even though the agricultural sector remained fairly intact the continuous restructuring especially of the former coordination arrangements considerably weakened the prospects for implementing biodiversity management actions.

The reforms that emerged during implementation of NEAP also increased the gap between NEMA and the DLGs and subsequent loss of donor support considerably reduced the engagement between the biodiversity coordination component and the implementing entities in the DLGs. The District Environment Committees (DECs) and Local Environment Committees (LECs) that had been created as part of NEAP implementation were generally folded by DLGs in cost-cutting measures and replaced with general purpose committees to cater for all local government planning and

monitoring. However, engagement on a capacity level has been very low since the early 2000s (NEMA 2007).

The current institutional arrangements allow for disproportionately high technical and financial capacity at the national level and poor capacity and organisation at the sub-national level. This is particularly the case for many DLGs. There are very few technical staff at the many DLGs and there are no resources in local revenue to sustain the activities undertaken. The sustainability of activities is based on central government transfer with very little priority for biodiversity management. Indeed, the only consistent funds contributing to biodiversity for local governments are wages, poverty action funds (PAF) ranging between UGX 1 and 8 million/year/District used for wetland management actions (MWE SPR 2014). The potential to generate local revenue is through levies and charges on fish, timber, wood fuel and sand. However, no strategic biodiversity management planning has been undertaken for these. Moreover, due to the poorly designed financial accounts many of these revenues are not acknowledged for the biodiversity contribution therefore little obligation to plough back into biodiversity management.

The planning cycle at the subnational level occurs between the upper local government (that includes district, city and municipalities) and lower local government (that includes sub counties and town councils). The raw plans of projects and activities are generally developed at the lower local government level. The upper local government sieves and prioritizes the plans in line with local government development plan (LGDP). Subsequently, national work plans and budget framework papers (BFP) are developed and the LGDP revised. The BFPs and work plans are shared with MFPEd through the ministry of local government and reflecting some of the priorities funded at national level. The subnational governments also collect/generate local revenue, some of which can be used for biodiversity conservation.

### ***Private sector civil society and development partners***

The key roles specified for private sector in Uganda's NBSAP are: (i) investing in sustainable and environmentally-sound technologies; (ii) investing in alternative income-generating activities; (iii) contributing to resources to support programmes on land management and biodiversity conservation; and (iv) providing support to the new financing mechanisms proposed in NBSAPII. However, with no explicit programme for private sector support towards biodiversity conservation private sector is active in development of alternatives to biomass harvested for industrial heating. The options include co-generation from bagasse, low energy stoves and solar energy. Companies such as Coca cola are supporting water resources catchment management actions. While Stanbic Bank and Standard Chartered Bank have financed agro-forestry greenhouse gas mitigation projects. Investments in cleaner production and consumption and advocacy for green growth are some of the other actions where private sector has been active.

The lesson for BIOFIN is to streamline private sector engagement and scaling up the multiple pilot activities into a national private sector biodiversity platform.

Civil society has been markedly active in biodiversity management finance in the country. The history of biodiversity conservation finance comprises of pioneer innovations by civil society. The current national environmental management policy structure includes pioneer interventions by the World Conservation Society, the United Nations Environment Programme and UNDP with support of the World Bank and the

United States Agency for International Development. Leading civil society organisations national and international are highlighted in this report.

International development and donor institutions and organisations have been pivotal to mainstreaming of biodiversity conservation through support of instruments for biodiversity management. The support has been extended to civil society, private sector and public sector projects and policies, respectively. Among the leading partners for biodiversity management are; UNDP, UNEP, United Nations Industrial Development Organisation (UNIDO), and the UN Food and Agriculture Organisation (FAO). At the multilateral level, the World Bank, African Development Bank (AfDB), European Union, and bilateral donors such as the German, Norwegian, Swedish and United States Governments have been instrumental in the success of old and on-going efforts for biodiversity management.

### **Summary review of Mechanisms for Financing Biodiversity**

A summarized review of the biodiversity financing mechanisms in Uganda, found as follows:

- (i) The target financing from private sector are obligatory taxes, levies and fees. The taxes on imported items such as motor vehicles and second hand clothes under the environmental levy are the major forms of private sector finance.
- (ii) Innovative instruments such as biodiversity offsets, payments for ecosystem services (PES), environmental taxes for oil and gas, have been proposed in the new legislation but have not yet been operationalized.
- (iii) Charges that form non-tax revenue (NTR) are also common in wildlife management under the mandate of Uganda Wildlife Authority (UWA) and the Uganda Wildlife Education Centre (UWEC). These fees are also paid by private citizens and other tourists.
- (iv) Climate change finance in Uganda has also contributed to biodiversity management; both voluntary and regulated market carbon finance for greenhouse gas (GHG) mitigation. The new reduced emissions from deforestation and forest degradation (REDD) financing is expected to increase the level of financing towards biodiversity conservation, especially towards forest landscape restoration. Climate adaptation initiatives have generally been donor driven and include focus on drought resilience and ecosystem restoration.
- (v) An assessment conducted by NEMA in 2014 found that one third of all financing for biodiversity conservation comes from donors. This finance includes funds from the Global Environment Facility (GEF), bilateral financing from the United States Agency for International Development (USAID), the European union, European countries such as United Kingdom, Germany, Norway, Sweden and Australia, among others.
- (vi) Private sector initiatives under corporate social responsibility (CSR) are also an increasing source of financing for biodiversity management. The financing often targets support towards early investment in forest landscape restoration and catchment based water resources management. These facilities have largely supported national and international NGOs.
- (vii) Uganda has some successful conservation funds such as the Bwindi-Mgahinga Conservation Trust (BMCT) and the newly established Uganda Biodiversity Fund. However, national level trust fund mechanisms are still very few. Instead several organisations such as ECOTRUST, the Uganda Carbon Bank and WWF Uganda develop endowment or conservation funds with several windows to meet expectations of different donors.



## Recommendations for Policy and Institutional Review

1. The BIOFIN process in Uganda has generated information and basis for a new process of strategic planning on the biodiversity management obligations across sectors. The strategic planning would lead to redesigning plans, implementation arrangements and leveraging resources to improve efficiency and effectiveness. Equally important is enhancing the contribution of sub-national authorities and reducing the disparity in capacity.
  2. Government needs to be committed to strategic plans for ecosystem management and livelihoods enhancement. Continuous disruption of programmes or plans sends wrong signals. Important sectors particularly agriculture and energy should be the immediate targets.
  3. The government needs to directly address the high rate of deforestation. The interventions should target the resource at high risk -forest on private land. There is a need to prioritise sustainable energy options and/or technologies for charcoal kiln, and creation of awareness on improved energy use.
  4. Biodiversity flagship programmes for forestry management, catchment based water resources management, fisheries management and financing mechanism for biodiversity management emerge as priorities for the biodiversity finance plan. These targets ought to be included in medium term-plan for the first 5 years.
  5. Policy and institutional engagement on implications of the biodiversity finance plan at national level, to MDAs, parliament, and at sub-national level to District Local Governments, urban Authorities is needed. There is a plethora of financing approaches that need to be harmonized. The synergies may include joint design, joint implementation or sharing information, monitoring and valuation platforms.
  6. It is clear that the status of biodiversity management, and/or natural resource and ecosystem services for Uganda should be assessed regularly perhaps as part of a natural resource accounting system. Integrated environmental economic systems with data collection and collation capacity built among MDAs and DLGs.
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# 1. INTRODUCTION

## 1.1 Background

In October 2010, Parties to the Convention on Biological Diversity (CBD) at its tenth meeting of the Conference of the Parties in Nagoya, Japan agreed on a set of 20 time-bound, measureable global biodiversity targets, known as the “Aichi Biodiversity Targets” that are aimed at contributing to reducing, and eventually halting, the loss of biodiversity at a global level by the middle of the twenty-first century. The Aichi Targets are part of the Strategic Plan for Biodiversity 2011-2020. The five strategic goals of the Strategic Plan for Biodiversity are: A) Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; B) Reduce the direct pressures on biodiversity and promote sustainable use; C) Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity; D) Enhance the benefits to all from biodiversity and ecosystem services; and E) Enhance implementation through participatory planning, knowledge management and capacity building.

Under strategic goal E, Target 20 of the Aichi targets is to promote resource mobilisation. Target 20 states that by 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

At the 12<sup>th</sup> meeting Conference of Parties held in Pyongyang, Republic of Korea, Decision XII/3 on resource mobilization adopted financial targets with the aim of: (i) doubling international biodiversity-related funding flows to developing countries by 2015; (ii) inclusion of biodiversity in national priorities or development plans by 2015; (iii) reporting domestic biodiversity expenditures, as well as funding needs, gaps and priorities, by 2015; (iv) preparation of national financial plans for biodiversity by 2015 and assessment and/or evaluation of the values of biodiversity; and (v) mobilize domestic financial resources from all sources to reduce the gap between identified needs and available resources at domestic level (Lehmann 2015).

Uganda has produced two National Biodiversity Strategies and Action Plans (NBSAPs); NBSAP1 and NBSAPII. NBSAP1 had five strategic objectives (GOU 2005):

1. Developing and strengthening co-ordination, measures and frameworks for biodiversity management;
2. Facilitating research, information management and information exchange on biodiversity;
3. Reducing and managing negative impacts on biodiversity;
4. Promoting the sustainable use and equitable sharing of costs and benefits of biodiversity; and
5. Enhancing awareness on biodiversity issues among the various stakeholders.

NBSAPI described without specifying, the generally low funding for biodiversity conservation and the heavy dependence on development partners for biodiversity conservation. There were concerns that such funding, from donors, was unsustainable and interfered with long-term planning and prioritisation for institutions engaged in biodiversity conservation in the country. As part of the preparations for NBSAPII, NEMA conducted financial analysis studies for the period between 2004/05 and 2012/13, which indicated that donors support one-third of the budgetary expenditure for biodiversity related investments in the Agriculture, Water and Environment and Tourism, Trade and Industry sectors. The rest of the funding came from central government and fees charged from private sectors (NEMA 2014). Even though the financing performance was inconsistent, NBSAPI, as part of the general strategies, had set out to; identify and develop sustainable funding mechanisms for biodiversity conservation, promote economic incentives for biodiversity conservation and initiate policy development to address policy gaps in biodiversity conservation, among others.

The review of NBSAPI used in setting targets for NBSAPII, showed that implementation of the strategy and action plan was compounded by the following obstacles:

1. Inadequate financial resources for implementation of planned activities and programmes in the NBSAP.
2. Inadequate awareness of NBSAPI among key implementing partners and the general public.
3. Inadequate human and infrastructure capacity in certain fields of biodiversity conservation such as taxonomy and characterization of germ-plasm in the National Gene Bank, among others.
4. Lack of a central node/Clearing House Mechanism (CHM) to facilitate information sharing among institutions involved in biodiversity conservation.
5. Limited information on indigenous farm plant and animal genetic resources.
6. Inadequate managerial and technical capacity at the District and lower local Government levels for implementation of NBSAP.

Institutions implementing NBSAP in Uganda have made attempts to address these challenges. A CHM for biodiversity has been set up, with the National Environment Management Authority (NEMA) acting as the secretariat. There are ongoing efforts to revive the capacity of the National Biodiversity Data Bank in Makerere University. Moreover several institutions engaged in biodiversity conservation such as the National Agricultural Research Organisation (NARO), Uganda Wildlife Authority (UWA) and the National Forestry Authority (NFA), among others, have made commitments to developing and maintaining databases for improved conservation. To address ongoing financial constraints, NEMA developed guidelines and action plans for biodiversity conservation to address financial resource mobilisation for the period of 2014/15 to 2024/25. However, the intervention of the Biodiversity Initiative (BIOFIN) has expanded and reinforced the possibilities under NBSAPII.

Therefore, as part of contributing to the Aichi Targets, in October 2012, UNDP launched the Biodiversity Finance Initiative (BIOFIN) as a new global partnership seeking to address the global biodiversity finance challenge in a comprehensive and systematic manner. The aim of this partnership is to enable governments to construct a sound business case



for increased investment in the sustainable and equitable management, protection and restoration of biodiversity and ecosystems.

BIOFIN works along two main axes: (i) Globally-led development of a new methodological assessment framework; and (ii) Adaptation and implementation of this new methodological framework at national level. The methodological framework is centred on the BIOFIN Workbook, which sets out a series of national assessments (CBD 2012). The work on adaptation and implementation of this new methodological framework at national level is led by NEMA in cooperation with the Ministry of Finance, Planning and Economic Development (MFPED), with support from the UNDP Country Office, and comprises:

1. Analysing the integration of biodiversity and ecosystem services in sectoral and development policy, planning and budgeting.
2. Assessing future financing flows, needs and gaps for managing and conserving biodiversity and ecosystem services.
3. Developing comprehensive national Biodiversity Finance Plan to meet the biodiversity finance gap.
4. Initiate implementation of the Biodiversity Finance Plan at national level.

The implementation of these activities is split into two phases. The first phase deals with actions 1 to 3 as delineated above, a second phase to initiate implementation of the Biodiversity Finance Plan will be implemented after the plan has been developed and endorsed by stakeholders.

## 1.2 Rationale and context of BIOFIN in Uganda

Since 2007, Uganda has been implementing a comprehensive National Development Planning Framework which provides for development of a 30-year vision implemented through: (i) three 10-year plans; (ii) six 5-year National Development Plans (NDP); (iii) Sector Investment Plans (SIPs); (iv) Local Government Development Plans (LGDPs); (v) annual work plans for sectors; and (vi) budgets. The current 30-year vision is referred to as "Vision 2040" while the current five year development plan is NDP 2. Whereas many sectors have developed investment plans many others have not. In some cases, such as in the Environment and Natural Resources (ENR) Sub-sector, the implementation of the sector investment plans has been overtaken by more recent events. The ENR SIP was developed to identify priority investments in ENR sector. The SIP was endorsed by Government in 2007. However, the merging of the ENR and Water and Sanitation sectors into the Water and Environment Sector, and the realignment of the medium term plans under NDP 1 (2010/2011 – 2014/2015) and NDP 2 (2015/16 – 2019/20), and the long-term plans under Vision 2040 (GoU 2013; 2011; 2015) reduced the effectiveness of the ENR investment plan. The annual work plans allow sectors to align their plans with the national budget and plans.

Globally, as well as in Uganda, the BIOFIN programme seeks to achieve the following objectives: (1) Analyse the integration of biodiversity and ecosystem services in sectoral and development policy, planning and budgeting; (2) Assess future financing flows,

needs and gaps for managing and conserving biodiversity and ecosystem services; (3) Develop a comprehensive national Biodiversity Finance Plan to close the biodiversity finance gap and improve the efficiency of biodiversity management; and (4) Initiate implementation of the Biodiversity Finance Plan at the national level.

### 1.3 Objectives of the policy and institutional review

The objectives of the policy review were to:

1. Describe the perspective of national development plans towards biodiversity conservation finance.
2. Review the status and trends of biodiversity.
3. Review economic sectors; describe their associated negative and positive biodiversity and ecosystem trends.
4. Review sector policies, and practices.
5. Describe financial and economic drivers of biodiversity trends by sector.

The objectives of the institutional review were to:

1. Review and describe key finance actors and stakeholders, and their roles and responsibilities in biodiversity finance.
2. Review and describe institutional arrangements and dimensions in diversity finance.
3. Describe the distribution of benefits and costs of the biodiversity trends.
4. Review and describe capacities and capacity needs.

### 1.4 Flow of report

The report is divided into six parts. The introduction described above, the methodology as section two, the policy review in section three and the institutional review in section four. The fifth section has a description of the status of biodiversity finance in the country and the final, sixth section, covers recommendations for future BIOFIN investment.

### 1.5 Design for the review

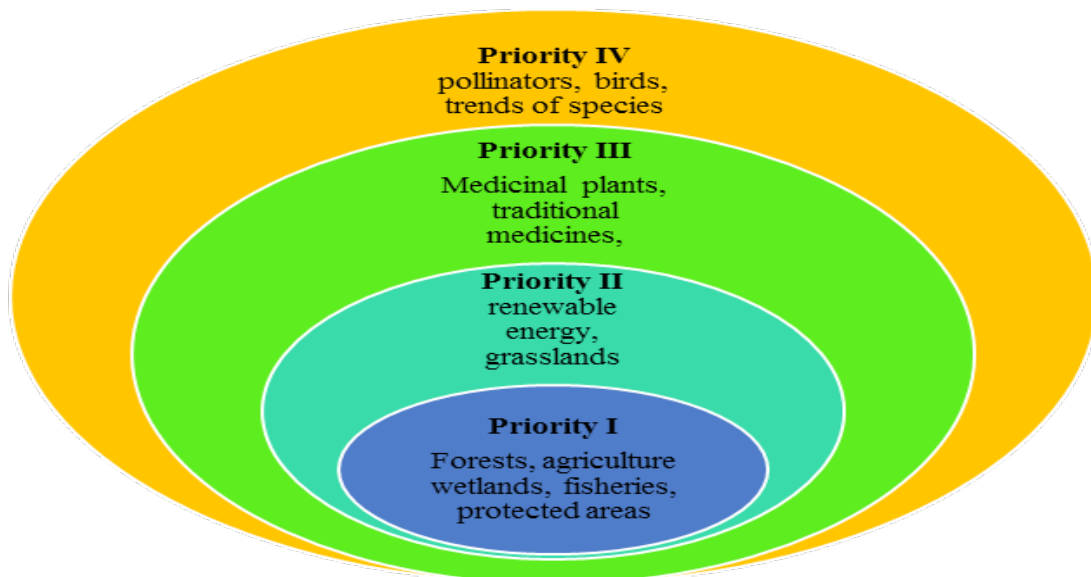
The policy and institutional review was designed as an exploratory evaluation with components for descriptive evaluation in the synthesis phases of the review. The exploratory evaluation component deals with analysis of current policy and institutional frameworks affecting biodiversity and ecosystem services both positively and negatively. On the other hand, the descriptive component will lead to quantifying related investments through comprehensive reviews of past and current (baseline) public and private expenditures, and analysing impact, effectiveness and coherence of policies to provide key opportunities for mainstreaming, aimed at enhancing resource mobilisation and availability for biodiversity conservation.

The purpose of the policy review is to: a) better understand the causes of and potential levers for changes in biodiversity; b) highlight policies and practices that lead to biodiversity loss; c) identify effective policies and practices; d) identify existing and

potential finance actors; and e) find areas for financial alignment and efficiency (UNDP 2014). The purpose of the institutional analysis is to assess the relationships between a) the status quo of existing drivers of change; b) the projected new strategies that flow from these drivers of change; and c) the actors and institutions that are responsible for, affected by and dependent upon, these drivers and their related strategies (UNDP 2014).

The exploratory review of the institutional and policy structure for BIOFIN employed the Drivers-Pressures-State-Impacts-Responses (DPSIR) framework and root cause analysis (RCA), respectively. The design of the policy review has been informed by the priorities of ecosystems and ecosystem services in the first and second NBSAP to CBD for Uganda (Figure 1) where the ecosystems with stronger livelihoods and higher contribution to biodiversity, regulatory and ecosystem functioning components are highlighted.

**Figure 1: Priority ecosystems and ecosystem services**



The prioritisation was through matching biological diversity and ecosystem services prioritised with sectors, as adopted from the first and second NBSAP. The primary, secondary and tertiary sectors are delineated in Figure 2. This assessment lays emphasis on the primary sectors interlinked to issues within secondary sectors which subsequently interlink with the tertiary sectors. For instance it may not be immediately apparent why the information, communication and technology sector is linked to biodiversity conservation until analysis shows for instance that some communities have no access to radio, television and phone networks to participate in national biodiversity conservation programmes. On the other hand, change in land use cover under agriculture or forestry is directly associated with biodiversity loss.

**Figure 2: Priority list for sectors for policy review**

## 1.6 Data types, collection and analytical approaches

The data types included policies, laws, regulations, guidelines, programmes and regulatory evaluation reports and information from stakeholders who have been involved in implementing, designing and/or evaluating the biodiversity management and finance in the country. Additional data was generated from examples of attempts to implement financing and policy, based on case studies.

The data was collected through interactive engagements with actors from the priority sectors through meetings, discussions, phone calls and follow up on information searches. The literature from reports was acquired both through internet searches, office visits, collation of materials available from previous NBSAP development processes, and iterative discussions with non-governmental organisations and private sector actors involved in financing biodiversity conservation and implementing a range of related projects. The policy review was focused on ecosystems, ecosystem services and their management, and interactions at policy level, and interactions between actors and management actions through institutional analysis.

The analytical approach is built on the “Driver-Pressure-State-Impact-Response” (DPSIR) framework for the policy review while “Root Cause Analysis” (RCA) is the main approach used for the institutional review. The starting point for the policy review was identification of state, a pressure or driver that would influence the trends of that state, status of biodiversity and subsequent characterisation of the sector practices, policy factors and market forces, and the prioritisation of recommendations that emerged from the outputs of the analysis. On the other hand, the review of institutions was also initiated through state or drivers and then a deeper assessment of the roles and responsibilities of different organizations. RCA was used to delve into causes of institutional interactions and subsequent practices of biodiversity conservation and financing. RCA involves causal factor charting, cause identification and recommendation generation. RCA reveals underlying root causes (often more than one), and it limits attempts to latch on to simple, quick fixes that don’t address underlying root cause. The basic steps of RCA are: (i) define - Understand the full scope of the problem; (ii) analyse - Why does the problem occur; and (iii) solutions - Develop corrective solutions to prevent problem from recurring. The outputs of the policy and institutional review are:

- a) Key status and trends in biodiversity;
- b) The most important sectors and sectoral practices that drive these trends;

- c) The most important policies, policy factors and market forces that contribute to the practices (including incentives, taxes and subsidies);
- d) Principle biodiversity finance solutions currently being used in the country, and concise set of prioritised recommendations for improving or expanding sectoral practices and policies;
- e) A set of key sectoral actors related to each major driver of change in biodiversity and ecosystem status and trends;
- f) Impacts and dependencies, and the distribution of costs and benefits, under both a status quo workbook and biodiversity investment state;
- g) Consolidated set of finance actors to be included in biodiversity management;
- h) Analysis of the existing finance roles of these key actors; and
- i) New and existing capacity needs for each actor to implement the results of BIOFIN assessment and financial implications of these gaps.

### **Steps for the policy and institutional analysis**

- Identifying national vision and key trends for biodiversity and sustainable development
  - Identifying sectoral interactions with biodiversity, ecosystems and ecosystem services
    - Status and trends in biodiversity and biodiversity valuation
    - Key economic sectors and their interaction with biodiversity and ecosystem services
    - Prioritized set of key sectors
    - Financial and economic drivers of biodiversity trends
  - Current status of biodiversity finance in the country
    - Finance mechanism currently in use in the country, identify:
    - Major government subsidies, identify the following:
      - Biodiversity finance legislation, laws, acts that contribute to drivers,
  - Identifying key biodiversity finance actors and stakeholders
  - Identifying institutional arrangements and dimensions in biodiversity finance
-

## 2. FINDINGS FROM THE POLICY REVIEW

### 2.1 BIODIVERSITY: Policy and Practice

#### 2.1.1 National biodiversity strategies and policy

Biodiversity conservation in Uganda can be traced from the national constitution. In chapter three of the Constitution the duties of citizens include, among others, to create and protect a clean and healthy environment. The specific provisions in the national constitution on biodiversity conservation state as follows:

- (i) XIII. Protection of natural resources. The State shall protect important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda.
- (ii) XXI. Clean and safe water. The State shall take all practical measures to promote a good water management system at all levels.
- (iii) XXVII. The environment. (i) The State shall promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations; (ii) The utilisation of the natural resources of Uganda shall be managed in such a way as to meet the development and environmental needs of present and future generations of Ugandans; and, in particular, the State shall take all possible measures to prevent or minimise damage and destruction to land, air and water resources resulting from pollution or other causes; (iii) The State shall promote and implement energy policies that will ensure that people's basic needs and those of environmental preservation are met; and (iv) The State, including local governments, shall — (a) create and develop parks, reserves and recreation areas and ensure the conservation of natural resources; and (b) promote the rational use of natural resources so as to safeguard and protect the biodiversity of Uganda;

Uganda's NBSAPII envisions maintaining a rich biodiversity benefiting the present and future generations for socioeconomic development (GoU/NEMA 2015). The goal of NBSAPII is to enhance biodiversity conservation, management and sustainable utilisation and fair sharing of the benefits.

The strategic objectives of the NBSAPII are:

1. To strengthen stakeholder co-ordination and frameworks for biodiversity management
  2. To facilitate and enhance capacity for research, monitoring, information management and exchange on biodiversity
  3. To put in place measures to reduce and manage negative impacts on biodiversity
  4. To promote the sustainable use and equitable sharing of costs and benefits of biodiversity
  5. To enhance awareness and education on biodiversity issues among the various stakeholders
  6. To harness modern biotechnology for socio-economic development with adequate safety measures for human health and the environment
-

## 7. To promote innovative sustainable funding mechanisms to mobilize resource for implementing the Strategy

The principle biodiversity conservation policies and regulations include the National Environment Policy (1994), the Uganda Wildlife Policy (2014), the National Forestry Policy (2001), the National Wetlands Policy (1995), and the National Agriculture Policy (2013). The objective on biodiversity conservation in the National Environment Management Policy (GoU 1994) is to conserve and manage sustainably the country's terrestrial and aquatic biological diversity in support of national socio-economic development. The policy's 13 strategies provided the foundation for coordination of environment management that informed all subsequent environmental and natural resource management policies. The strategies comprise:

1. Developing comprehensive and coordinated policies;
2. Enacting and/or reactivating legislation on the management of natural resources to provide for conservation of biodiversity;
3. Developing policy framework and guidelines for management of buffer zones and buffer areas in and around protected areas (PAs);
4. Establishing mechanisms for collaboration between PA management and the neighbouring communities;
5. Establishing a coordination framework for sectoral institutions concerned with biodiversity conservation;
6. Re-assessing priorities in protected area management to maximize its cost effectiveness;
7. Identifying valuable areas of terrestrial biodiversity outside of protected areas, including gazetted PAs, purchase of land-use rights or conservation easements;
8. Identifying and mapping valuable areas and sensitive habitats of aquatic biodiversity and exploring means of protecting such areas;
9. Fostering public support for biodiversity actions and encouraging private investment;
10. Re-instituting methods of adoptive management;
11. Strengthening links to international biodiversity conventions;
12. Increase cooperation on conservation of shared biological resources with other countries; and
13. Integrating and coordinating in situ and ex situ methods of genetic and species conservation.

### 2.1.2 National planning and biodiversity conservation

Since 2007 the Government of Uganda has been implementing the comprehensive National Development Planning framework which provides for development of a 30-year vision implementation process (GoU 2012). The 30-year vision implementation process comprised of the 30-year vision itself "Vision 2040", three 10-year plans, six 5-year National Development Plans (NDPs), sector investment plans (SIPs) which are often 10-year plans, Local Government Development Plans (LGDPs) at the District level (also usually 5-year plans), annual work plans for Ministries, Departments and Agencies (MDAs), and Local Governments; and budgets which are annual.



According to Vision 2040, the sectors that critically lead to economic transformation in Uganda directly related to biodiversity and ecosystem services include water resources, agriculture, tourism and other indirectly linked sectors such as industry, minerals, oil and gas and information, communication, and technology (GoU 2012). In the country's NDP II (2015/16 – 2019/20), wealth creation for the country will be achieved through harnessing Agriculture, Tourism, Minerals, Oil and Gas, Environment and Natural Resources, climate factors and Trade, Industry and Cooperatives (GoU 2015).

At least one-fifth (8/40) of targets and sub-targets in Uganda's vision 2040 if realised would strongly benefit biodiversity conservation and can provide a direct and indirect means of biodiversity finance. Vision 2040 established 40 targets and sub-targets on which long-term sustainable growth will be assessed. However, only two of the targets are directly associated with biodiversity conservation. The government envisions increased forest cover, by land area percentage from 15% in 2010 to 24% by 2040. Secondly, the Vision sets a target for wetland area cover to increase from 8% of land area to 13% by 2040. The targets indirectly linked to biodiversity are: (i) increasing agricultural contribution to Gross Domestic Product (GDP) by magnitude of 15-fold; (ii) increasing volume of water consumed per capita about 23-times (from 26 to 600m<sup>3</sup>); (iii) increasing electricity consumption (Kwh per capita) from 75 to 3,668 given that Uganda's electricity production is largely growing through hydroelectric power generation, biomass (co-generation bagasse for sugar companies); (iv) increased agro-industry; and (iv) increasing economic performance of tourism sector.

The National Development Plan proposes increased agricultural productivity and value addition. Principally agricultural development is to be achieved through intensification e.g. use of inorganic fertilisers and manure and/or land expansion. From a biodiversity perspective improved water storage and water quality can be achieved through increased wetland management, improved management of freshwater resources of rivers and lakes and terrestrial systems such as forests, and agro-ecosystems or mountain landscape that affect water quality and quantity.

### 2.1.3 Key sectors with core interactions with biodiversity and ecosystem services

Out of the 16 defined government sectors<sup>1</sup>, five sectors with major concerns relating to biodiversity conservation and finance were selected. The sectors are based on the NBSAP1 and 2, and contributions of the Technical Steering Committee (TSC) for the BIOFIN project. The five sectors are: Water and Environment; Agriculture; Tourism, Energy, and Works and Transport.

#### 2.1.3.1 Agriculture

The agriculture sector is one of three core components of Uganda's economy alongside industry and services. Agriculture contributes 23% of the national GDP at current prices (UBOS 2015). The proportion of the sector's GDP contribution declined from peak of 70% in the 1970s, to 50% in the 1980s as the government pursued structural reforms to expand the economy away from primary agricultural commodity production (Ssewanyana et al. 2011). In the late 1980s, agriculture contributed about 56% of the country's GDP, and by 2006 agriculture's contribution had declined to 24.5%, and 23% at market price in

<sup>1</sup> The sectors are: Security; Roads and Works; Agriculture; Education; Health; Water and Environment; Justice, Law and Order Sector (JLOS); Accountability; Energy and Minerals; Tourism, Trade and Industry; Lands, Housing and Urban Development; Social Development; Information and Communication Technology; Public Sector Management; Public Administration and Parliament



2014 (World Bank 2015; UBOS 2015). The structural reforms undertaken led to improved performance in the industrial and services sectors where the GDP contribution was only 5.9% and 33.2% in 1987, and by 2014 it was 18.4% and 50.3% at market prices (World Bank 2015; UBOS 2015).

Despite the structural adjustments the agricultural sector still employs 70% of the population and much of the recent economic growth has come from the services sector, which only employs the highly skilled (Ssewanyana et al. 2011). Even though there was considerable progress in diversifying its export base away from coffee, in the 1990s and early 2000s, Uganda still remains a primary commodity exporter, with limited value addition to its major exports.

The agricultural sector consists of five main subsectors, namely food crops, cash crops, fishing, livestock and forestry. The smallholder farm dominates agricultural production, and most of the food produced is consumed at home with surplus marketed in local and district markets. The food crops subsector basically carries the agricultural sector contributing half of the GDP at market prices, at 11.5% of national GDP in 2015 (MAFAP 2013; UBOS 2014). Traditional cash crops such as coffee, tobacco, cotton, sugarcane, horticulture and flowers, and cocoa contributed only 1.7% to national GDP. Fishing contributed 1.8% of national GDP, even though the fishing sub-sector has been growing in recent times. Livestock contributed only 4.0% of national GDP (UBOS 2014). Livestock production also occurs on smallholder farms. Mixed farming, small holders and pastoralism form about 95% of the cattle herd and 100% of the small ruminants.

### **2.1.3.2 Water and Environment Sector**

#### Environment and Natural Resources Sub-sector

The Water and Environment sector is a central sector for biodiversity conservation. It is divided into two sub-sectors: 1) Environment and Natural Resource and 2) Water and Sanitation. Environment and Natural Resources sub-sector covers forest resource management, wetland management, environmental management activities, climate change and meteorological activities. Environmental management and biodiversity conservation actions are often cross-cutting and mainstreamed into other sectors as a regulatory requirement. Therefore, most government ministries have environmental management focal persons and increasingly climate change is also being mainstreamed into all sectors.

Forests and woodlands are vital resources that contribute about 3.5% to the GDP according to national accounts, although separate studies have put the amount closer to 8% (UBOS 2014; NEMA 2012). However, an assessment of the contribution of the forestry sector to the national economy using a natural resource accounting approach indicated, based on conservative estimates, that the forestry resource contributed about US\$ 1,277 million to the national economy in 2010 equivalent to UGX 2,960 billion. Based on the national gross domestic product (GDP) for 2009, at current prices, of UGX 34,166 billion, the forestry sector contribution was equivalent to 8.7% of the GDP, more than double the 3.2% acknowledged in the national statistical abstract (Masiga et al. 2013). The total annual consumption of wood is estimated at 33 million tonnes, which is consumed as household firewood, charcoal, commercial and industry firewood, poles and timber. About 90% of Ugandans use wood as the only source of energy and 850,000 persons in

Uganda are employed in the forestry sector. Forests also provide cultural and spiritual values. However, Uganda's forest area is being reduced at a fast rate with deforestation rate of 1.8% per year. Between 1995 and 2005 satellite mapping, Uganda's forest area was reduced from 24% to 18% of the land area resulting in a deforestation rate of 1.8% per year (GOU 2015a).

One of the most important resources that contribute to sustainable water catchments and pollution management especially in urban areas and contribute substantially to livelihoods in Uganda are wetlands. Wetlands and mountain ecosystems are both critical fragile and endangered ecosystems in the country (NEMA 2012). Several studies conducted show that wetlands contribute to pollution management, provide mulch for gardens, thatch for roofing and papyrus for making mats and baskets (Box 1). Wetlands are said to contribute well over \$1 billion/year in national income (Kakuru et al. 2013). Mountain ecosystems provide landscapes that serve as water sources such as Rwenzori Mountain and the Mt. Elgon ecosystem. The same ecosystems support large communities of rural livelihoods and provide a habitat for important biodiversity in the country (UBOS/MAAIF 2008).

#### **Box 1: Wetland Uses and values in Uganda**

Wetlands provide a wide range of tangible and nontangible benefits to various communities. The tangible benefits include water for domestic use and watering of livestock, support to dry season agriculture, provision of handicrafts, building materials, and food resources such as fish, yams, vegetables, wild game, and medicine. The non-tangible benefits include flood control, purification of water, and maintenance of the water table, microclimate moderation, and storm protection. Wetlands also serve as habitats for important flora and fauna, have aesthetic and heritage values, and contain stocks of biodiversity of potentially high pharmaceutical value.

Over 80% of the people living adjacent to wetland areas in Uganda directly use wetland resources for their household food security needs. Wetland resources play a vital role in contributing to food security through the following: (i) enabling direct availability of products such as fish, crops grown along the wetland edges, wild fruits and vegetables, and game meat; (ii) providing cash income from sale of raw materials and processed products such as crafts, sand, clay, bricks, and ecotourism; which are sold for cash that is used for purchasing/ accessing food; and (iii) contributing to increased crop and livestock yields as a result of improved productivity from use of water, silt, and through climate moderation.

**Source: Kakuru et al. 2013**

#### **2.1.3.3 Water and sanitation sub-sector**

Whereas the GDP contribution of water resources management and sanitation has not been independently determined, water resources and sanitation in Uganda are crucial to performance nearly in all economic sectors. By 2005, the annual per capita cost of investment needed to meet the Millennium Development Goals (MDGs) on water supply and sanitation in Uganda ranged between \$4 and 7/capita annually (WHO 2007). For the Water and Sanitation sub-sector the principal actions for biodiversity conservation revolve around water resources management. Water resources management is a mandate of the Water Resources Management Directorate. In 2005, it was estimated that use of inland water resources was worth nearly \$300 million/year in terms of forest catchment protection, soil erosion control and water purification services (WHO 2007).

Uganda is endowed with significant surface and ground water resources which consist of open water bodies (lakes and rivers), wetlands, groundwater, and rain water. Of the 241,500 km<sup>2</sup> total area of the country fresh water lakes occupy 36,280 km<sup>2</sup> (15%). The National Water and Sewerage Corporation (NWSC) is the primary water utility with several urban and local government authorities also operating as water utilities. The water resource supply is critical for urban, rural and industrial growth in the country. Uganda's water catchments are managed using Integrated Water Resources Management (IWRM) approaches based on a catchment management approach.

Water resources in Uganda are the primary source of electricity generation and the management of water resources is critical to long-term economic growth, sustainability and livelihoods. The importance of water resources has been highlighted in the UN Sustainable Development Goals and among the country's Vision 2040 and NDP II priorities (Box 2).

**Box 2: Water Resources Management and the Sustainable Development Goals (SDG)  
SDG Goal 6: Ensure availability and sustainable management of water and sanitation for all:**

- 6.1** by 2030, achieve universal and equitable access to safe and affordable drinking water for all.
- 6.2** by 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
- 6.3** by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, **and increasing recycling and safe reuse by x% globally.**
- 6.4** by 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity.
- 6.5** by 2030 implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate.
- 6.6** by 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
- 6.a** by 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
- 6.b** support and strengthen the participation of local communities for improving water and sanitation management.

**Source: UN 2015**

Given the importance of water resources in the country, the Water and Sanitation Sector Joint (Government and Donor) Sector Review, undertaking 4, held in October 2009 adopted catchment based Integrated Water Resources Management (CbWRM) to be operationalized including mobilising funds for all Water Management Zones (WMZs) while building synergies with other decentralised sector support structures. The outcomes to be pursued were proposed as: realigning WMZs with hydrological boundaries; a framework for operationalizing CbWRM; stakeholder engagement and participation; and capacity development among others.

#### 2.1.3.4 Tourism, Wildlife and Antiquities

Uganda's tourism is largely nature-based. Tourism generated \$1.7 billion to Uganda's economy in 2014, although only 15% of that was directly associated with visiting wildlife conservation areas. Uganda has a total of 735 forest and wildlife protected areas. There are 10 National Parks, 12 Wildlife Reserves, 10 Wildlife Sanctuaries, 5 Community Wildlife Management Areas, 506 Central Forest Reserves and 192 Local Forest Reserves. The most obvious contribution of biodiversity to income and wealth creation has been mainly through tourism. Tourism is currently among the five leading sources of foreign exchange in the country (GoU 2015a).

Institutions in the wildlife sector are leading innovations in wildlife conservation in the country through wildlife exchange programs, education outreach activities and increased partnership with individuals and institutions at Uganda Wildlife Education Centre (UWEC). The Uganda Wildlife Authority (UWA) is leading on benefit sharing, piloting biodiversity offsets, payments for environmental services and its own resource generation to manage more than four-fifths of the institution's budget.

At the wider sector level, there are strategic investments planned that will have significant impacts on biodiversity conservation and management. These include plans for legislative reforms for the Uganda Wildlife Education Centre, planned investments in the Rwenzori Mountain National Park and improvements to the Gorilla Tourism experience among others. Conversely, wildlife conservation is competing for land use from the oil and gas, mining and energy generation, and land use from the communities living near the protected areas, particularly in south-western and western Uganda. A number of approaches are being promoted to ensure that biodiversity conservation can coexist with the oil and gas and mining industry. The GoU through the Ministry of Water and Environment and NEMA have undertaken a number of strategic studies and are continuing to develop guidelines for integrating environmental considerations in oil and gas and mineral planning and development. Additional interventions include efforts of agencies such as the World Wide Fund for Nature (WWF) supporting catchment based water resources management in the Semuliki River Catchment. The USAID Activity on Environment Management in the Oil sector is also developing instruments to support NEMA, NFA, UWA and District Local Government to develop appropriate instruments to account for biodiversity in the oil and gas sector.

Private sector has often participated as service providers as tour company operators and through community based tourism investments in collaboration with UWA. Increasingly, public-private ventures for wildlife tourism experiences are taking root. Whereas Ngamba Island Chimpanzee Sanctuary was created as a sanctuary for chimpanzees rescued from poachers and danger, the sanctuary derives a reasonable size of funding from visitors and contributions of well-wishers. Similarly, the Ziwa Rhino Sanctuary was initiated as a sanctuary for re-introducing Rhinos into Uganda; the Southern White Rhino is both bred, and researched upon to support its introduction into the National Parks in the country. The rhino sanctuary also derives most of its funding from visitors and contributions from well-wishers.

### 2.1.3.5 Energy and Mineral Development

#### Energy Resources sub-sector

Uganda's energy demands are currently largely met through biomass sources which are increasingly causing pressure of deforestation on private and public forests. Fuel wood is the most highly consumed primary fuel with annual consumption of about 28 million tonnes of tree biomass. Another 16 million tonnes of wood are annually transformed into 1.8 million tonnes of charcoal using highly inefficient kilns (UBOS 2014). Thus a total of 44 million tonnes of wood biomass is consumed or transformed for energy.

The energy balance is comprised of biomass 89% (fuel wood 78.6%, charcoal 5.6% and agricultural residues 4.7%), petroleum products (9.7%), and hydroelectricity (1.4%, MEMD 2014). Most of the fuel wood is used for cooking where the highly inefficient three stone cook stove is the norm especially in the rural areas where most of the population lives.

Uganda's Renewable Energy Policy set a target to increase the use of modern Renewable Energy from 4% to 61% of the total energy consumption by 2017 (MEMD 2014). Even though success is being realised, access to electricity still stands at 14% nationally and in rural areas it is at 7%. Per capita electricity consumption remains one of the lowest in the world at less than 100kWhrs per person.

Biomass is used in all sectors of the economy, and more importantly, close to 100% of rural households and 98% of urban households use biomass energy for cooking. The Biomass Energy Strategy (BEST) 2013 proposes rational and implementable approaches to manage the biomass energy sector. The strategy is based on six components: improving communication and awareness, developing and maintaining a biomass information system, promoting the use of efficient technologies, promoting effective supply of biomass, innovatively mobilising resources and managing the institutional aspects especially multi-sectoral planning and public private partnerships.

Other sources of renewable energy particularly hydropower, biomass e.g. bagasse, geothermal and peats will have impacts and be impacted upon by biodiversity. Water catchments in Uganda are supported by wetlands, forest ecosystems and mountain ecosystems and vegetation. Degradation that affects the functioning of these ecosystems will impact on hydropower generation. Such disruptions have been observed in Kasese District landscape where floods disrupt hydropower generation, and poor management of the catchment such as channelling water from the rivers for irrigation and other land uses also reduced the water volume and pressure with impacts on electricity generation. Peats are usually associated with wetland areas while many of the sites for geothermal power generation are located in protected areas including Semuliki, Queen Elizabeth, Murchison Falls and Rwenzori Mt. National Parks, among others.

### 2.1.3.6 Works and transport

Uganda already spends approximately \$1 billion per year on infrastructure, equivalent to about 11% of GDP. Uganda's annual infrastructure funding gap is about \$0.4 billion per year, most of which is associated with irrigation as well as water and sanitation infrastructure (Ranganathan and Foster 2011). The works and transport sector receives



about one fifth of Uganda's annual budget. Infrastructure development is highlighted as a primary and enabling sector for other production sectors such as agriculture, tourism, industry and the services sectors.

The development of infrastructure represents conversion of other land uses into built up areas. Between 1995 and 2010, Uganda's built up areas increased over 15-fold (UBOS 2014) due to additional construction of roads, factories, urban centres and residential areas. The National Environment Act cap 153 and the EIA Regulations (1998) and Environmental Audit guidelines already guide environmental compliance in the sector. However, there are concerns that some of the on-going developments in the sector target wetlands and other publicly owned resources, and inadequate environmental compliance is undertaken given the public good nature of the investments. As the size of works and transport investments continues to grow, the importance of the sector to biodiversity finance will continue to grow.

## **2.3 Policies and practice of biodiversity conservation**

### **2.3.1 The Agriculture Sector**

In 2013, the Ministry of Agriculture developed a comprehensive Agricultural Policy. In the context of Uganda, agriculture includes crops, livestock, agro-forestry and fishing activities (GoU/MAAIF 2013). The policy is a realisation of a goal of aggregating all agricultural policies of the sector and aligning them within a single document. The policy was derived from the need to increase household incomes, food and nutrition security and employment as stipulated in the NDP, where agriculture is identified as one of the primary drivers of growth in the economy (GoU 2005). Agriculture continues to contribute between 20 and 24% of Uganda's gross domestic product (GDP), therefore its strategic economic importance is long standing.

The six objectives of the policy are: (1) Ensure household and national food and nutrition security for all Ugandans; (2) Increase incomes of farming households from crops, livestock, fisheries and all other agriculture related activities; (3) Promote specialization in strategic, profitable and viable enterprises and value addition through agro-zoning; (4) Promote domestic, regional and international trade in agricultural products; (5) Ensure sustainable use and management of agricultural resources; and (6) Develop human resources for agricultural development (GoU/ MAAIF 2013).

Concerns on biodiversity management were considered under objective five on ensuring sustainable use and management of agricultural resources. The specific strategies from which biodiversity management can be derived were: (i) periodically map and document the state of agricultural resources and their use patterns in the country, (ii) regulating exploitation of agricultural resources within ecologically sustainable levels, including addressing the hazards of land fragmentation, (iii) promoting and supporting dissemination of appropriate technologies and practices for agricultural resources conservation and maintenance among all categories of farmers, including sustainable land management (SLM) and conservation agriculture (CA), (iv) encouraging and supporting local governments to enact and enforce ordinances and by-laws regarding local utilization and management of agriculture resource, (v) promoting land use and farm planning services among farmers, and (vi) developing capacity at all levels for planning and implementation of activities to address climate change and its impact on agriculture.

Whereas the Agriculture Policy (2013) made an attempt to address biodiversity concerns, there was no explicit effort to articulate actions in a manner where actors can easily take up responsibilities and mandates. Indeed, nonetheless the recognition of regulation of land exploitation, periodic spatial planning for land use, appropriate technologies, regulatory reforms, and capacity building on biodiversity related issues makes a fair attempt to integrate biodiversity issues.

If the government had implemented or borrowed the aspirations on environmental management under the PMA, then the agriculture sector would be able to comprehensively cover all interactions with biodiversity and biodiversity related concerns. The PMA stated seven priority areas; research and technology development, NAADS, agricultural education, improving access to rural finance, agro-processing and marketing, sustainable natural resource utilisation and management, and physical infrastructure. Biodiversity management was catered for under the sixth priority on sustainable natural resource utilisation and management. The three critical areas indicated were on land utilisation, water for production, forestry and environmental issues (GoU 2002).

Under land utilisation the actions proposed were; (i) Initiate actions leading to the formulation of a national land use policy, (ii) implement the Land Act cap 227 to enable farmers get certificates of occupancy/customary ownership, (iii) undertake institutional reforms in the land registry so as to make land surveying, administration and titling easier and (iv) build capacity of local Governments for land administration and management including the implementation of the Land Act cap 227.

The water for production strategy had; (i) provided for research and demonstration of on-farm small-scale irrigation and water harvesting technologies, small to medium scale valley dams/tanks and fishponds, (ii) construction of strategic small scale irrigation schemes, valley dams/tanks and regional fish hatcheries by local Governments in partnership with the private sector, (iii) private sector and Local Governments' capacity building to effectively take over the planning, designing, construction/installation and management of water for production facilities, (iv) establish fish farming laboratory and equipment for research, setting standards and quality control, (v) re-appraisal and rehabilitation of all existing irrigation schemes and valley dams/tanks in partnership with the private sector, (vi) acquiring a strong database for early warning systems by renovating and equipping of all strategic agro-meteorological stations and soil physics laboratories, (vii) provision of regularly updated information on weather, through media, supplemented by advice on appropriate agricultural practices given the forecast conditions and (viii) curriculum development to effectively address water resources exploitation and management for production.

The strategy for forestry sought to review the current policies, regulations and institutional arrangements with the view to: (i) putting in place a comprehensive agricultural policy and legal framework that provides for forestry. This would also remove, amend and/or harmonise the inconsistent constitutional provisions, (ii) agro-forestry treated like other crop commodities and be provided with extension services at farm level as a decentralised function, (iii) the natural/protected forests/trees mandate consolidated and put in one ministry together with Wildlife, (iv) the forestry curriculum reviewed to provide adequately for farm forestry and (v) consolidating forestry research under one umbrella government agency.



Under the component on environmental management, the PMA had made considerations to address environmental concerns in the priority programme areas of research, extension, agro-processing, natural resource management, etc. and resources allocated to ensure that NEMA could play its role effectively and where necessary amendments to the National Environment Statute 1995 effected. Mechanisms for greater private sector and NGO involvement in the implementation of environment related programmes were to be made and capacities built at local government levels. The PMA had proposed studies to be conducted to identify inconsistencies in the existing laws and regulations and environmental monitoring mechanisms established within the implementation arrangements for the PMA. In addition, the PMA had envisaged a formal, structured environmental impact assessment (EIA) of the PMA investment interventions to monitor impact and undertake timely mitigation measures. The PMA noted that emphasis was to be put on ensuring effective linkages between the Agricultural Advisory Services and the Production and Environment Committees at various local government levels, and the environmental awareness activities of NEMA to influence the attitudes of those contributing to environmental degradation. Over the long-term, attitudinal change was to be effected through the formal education sector by promoting the inclusion of environment in school syllabi.

Instead of a comprehensive policy, the GoU implements a series of policies that are sometimes distinguished by commodity and/or process. The advantage of the specific policies is that they allow the agricultural industry to have expediency in action and they often culminate in creation of supporting institutional arrangements. The risk of specific policies is always ensuring they are aligned with the comprehensive policy. Some of the other policies in the sector are:

For the crop sub-sector: The National Coffee policy while for the Fisheries sub-sector policies include: The National Fisheries Policy. Animal sub-sector policies include: The Draft National Policy on Fisheries Management and Development of small Fishes; The National Policy for Delivery of Veterinary Services; The National Meat policy; The Uganda Food and nutrition Policy; The national Veterinary Drug Policy; The National Agricultural Research Policy Duration: 2003; Honey Production Policy; The National Animal Feeds Policy; Hides ,Skins and Leather Industry; Meat Policy-2003; Dairy Development Policy; Animal Disease Control Policy; Animal Breeding Policy; Delivery of Veterinary Services Policy; Veterinary Drugs Policy; Animal Feeds Policy; Range Land Policy; and Tide Central Policy

The multiplicity of policies under the Animal sub-sector led to duplication of activities at central and local government level and in multiple institutions especially competition for research activities between NAGRC&DB and NARO.

Under legislation, the sector has a number of laws, regulations, legal instruments, and rules for agricultural production and management. The cross cutting legislation include: the National Agriculture Research Organisation Act (2005), the Food and drugs act Chapter 278 that government is in the process of replacing with the Food and Medicine Authority Bill, and the Markets Act.

The legislation specific to the crop sub-sector include: The Plant Protection Act Cap 244 (1962) and the attendant orders and rules; Forests Act Chapter 146; The Agricultural Chemical

(Control) Act, 2006 and the attendant regulations; Control of Agricultural Chemicals Act cap 29; The Seeds and plant Act, 2006; The Cotton Regulations, 2005; The Cotton Development Instrument, 2004; and Agriculture and Livestock Development Fund Act.

The Animal Industry sub-sector legislation include: Hides and skin Act; Cattle Traders Act; Animal Breeding Act; Dairy Development Act; Dairy industry Act Chapter 85; Animal Diseases Act Chapter 38; Animal straying Act Chapter 40; Animals prevention of cruelty Act Chapter 39; Animals prevention of cruelty Act; Branding of stock Act Chapter 41; Cattle grazing Act Chapter 42; Animal Breeding Act, 2001; Animal Diseases Act; Hide and Skin Export Duty Act Chapter 339; Hide and skin trade Act Chapter 89; Hides and skin export duty Act Chapter 339; The Animal Diseases Regulations, 2003; The Dairy Regulations 2003; Animal Diseases (Importation of Poultry) Rules; Veterinary Surgeons Act; and The Cattle Traders Rules.

The Fisheries legislation include the: Fish Act Chapter\_197; The Fish (Aquaculture) Rules, 2003; and The Fish (Beach Management) Rules, 2003.

### Positive and Negative policy practice issues for the Agricultural sector

Positive	Negative
<b>Crop sub-sector</b>	
<p>a) Generally subsistence farming systems in Uganda are mixed with livestock and crops which promote sustainability of closed agricultural systems.</p> <p>b) Increasing finance options such as agricultural insurance are useful for commercial sector. Although similar systems in subsistence agriculture are limited.</p> <p>c) Strong sustainable value chains for coffee, cocoa, cotton also promote biodiversity in mountain landscapes (Mt. Elgon, Rwenzori).</p> <p>d) Uganda has developed a strategic investment framework for sustainable land management.</p> <p>e) Subsistence farming systems are an important source of biodiversity for bananas, and other food crops</p> <p>f) Growing focus of climate smart agriculture may boost survival of biodiverse systems for climate change mitigation and adaptation.</p> <p>g) A lot of non-wood forest products are combined with agriculture to boost production. They include honey beekeeping, medicinal plants. These are easily integrated in farm systems and lead to considerable savings.</p>	<p>a) Threats of poor farming practices especially in hilly and mountainous landscapes cause forest degradation, and loss of vegetation and unsustainable agricultural systems.</p> <p>b) Increasing commercial agriculture tendencies including monocultures (maize, rice, grains) and fertilisers may reduce sustainability of biodiverse agro-ecosystems.</p> <p>c) Paddy rice production is growing in wetlands. This affects other functions of wetlands, as well as risks of opening stored carbon stocks – leading to GHG emissions. However, paddy rice also supports important livelihoods.</p>

Positive	Negative
<b>Livestock sub-sector</b>	
<p>a) Uganda's traditional pastoral system provides strong reservoir for cattle and goat species and genetic diversity.</p> <p>b) The National Animal Genetic Resources Centre and Databank involves investments to maintain species diversity and research to boost future production using existing genetic diversity.</p>	<p>a) Whereas an Act was established to provide for funding agricultural and livestock development in 1976, there is no current action in this regard.</p>
<b>Fisheries sub-sector</b>	
<p>a) Fish (Beach Management) Rules 2003 were created to reduce fishing effort on lakes and increase fisher folk participation in sustainable management of fisheries- fish monger license and fees and fishing permits were established. Even though BMUs have mixed success the attempt to define rights and eliminate open access fisheries was an attempt to improve fisheries management.</p> <p>b) The reduction in capture fisheries allowed for the strong emergence of farm fisheries comprising; cage fish farming and pond based aquaculture. Indeed, whereas capture fisheries have been slow to recover fish incomes have recovered largely on the back of farm fisheries.</p> <p>c) Fish farming is private sector led with little government subvention. This is stimulating private sector investment into fisheries.</p>	<p>a) The creation of Beach Management Units (BMUs) rather than reduce fishing effort lead to an increase in fishing effort.</p> <p>b) A lot of illegal fishing activities including using of smaller nets below standards set.</p> <p>c) Smuggling of fish across borders with paying fees. This targets breeding/brood, which reduces sustainability of fishery.</p> <p>d) The introduction of cage farming and proliferation of aquaculture if not well regulated as is the case threatens further pollution and introduction of alien species into natural water systems. Moreover, the commercial gains of farm fisheries in natural lakes are still unclear, as fisheries are mainly capture fisheries.</p>

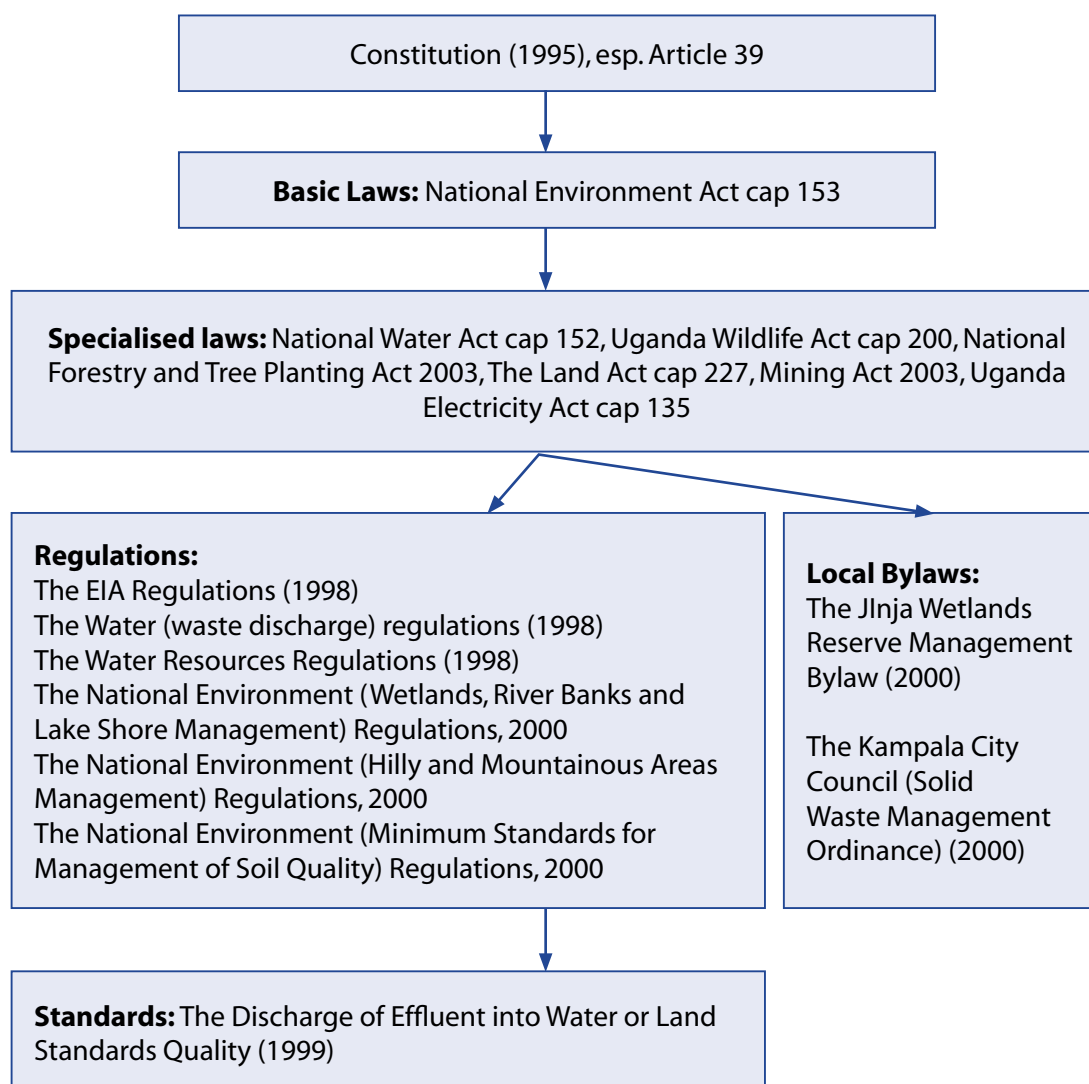
### 2.3.2 Water and Environment Sector

The water and environment sector comprises of two sub-sectors of water and sanitation and environment and natural resources management. At policy implementation, especially with regard to biodiversity conservation, the National Environment Management Policy (1994) and the National Environment Act cap 153 still support anchoring the coordination functions of NEMA.

Uganda's environmental policy reforms were timed coincided with outcomes of the United Nations Convention on Environment and Development (UNCED 1992). The outcomes of the UNCED were the Rio Multilateral Environmental Agreements (MEAs) comprising of the Convention of Biological Diversity (CBD), alongside the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention on Combating Desertification (UNCCD). Between 1991 and 1995, Uganda developed the National Environment Action Plan (NEAP) from which the National

Environment Management Policy (1994), and the National Environment Act cap 153 emerged. Subsequent reforms led to the development of the National Wetlands Policy (1995), the National Water Policy (1999), revision of the 1988 National Forestry Policy and development of the National Forestry Policy (2001), which subsequently led the National Forestry and Tree Planting Act (2003). Other reforms within the timeline were development of the National Water Act cap 152 and the Uganda Wildlife Act cap 200 (Figure 3)

**Figure 3: Environmental Legislation and Regulations in Uganda**



**Source: UNDP 2005**

The Environment Impact Assessment Regulations under the National Environment Act cap 153 provide an entry point of engagement with public and private sector on compliance for projects, programmes and plans on the national environment management standards. The subsector policies for forestry, water, wetlands and other natural resource management policies are aligned to the policy goal of the NEAP. The overall policy goal of the NEAP is to achieve sustainable social and economic development

which maintains or enhances environmental quality and resource productivity on a long-term basis that meets the needs of both present and future generations.

The implementation of the water resources component of the National Water Policy and the Water Act cap 153 is based on an integrated water resources management (IWRM) approach. To achieve IWRM, the sector adopted a catchment based integrated water resources management approach. The catchment based approach for which guidelines were developed was articulated by dividing the country into four water management zones (WMZ); the Victoria WMZ, Kyoga WMZ, the Albert WMZ and Upper Nile WMZ. The WMZ are named after the largest water systems in the country Lakes Victoria, Albert and Kyoga as well as the River Nile. Water management zones themselves were divided into catchments and the catchments into sub-catchments. The Directorate of Water Resources Management (DWRM) of the Ministry of Water and Environment (MWE) has established structures, offices and staff at each WMZ to support resource management activities. However, the point of strong engagement for communities is at the catchment and sub-catchment level where catchment management organisations (CMOs) led by a catchment management committee (CMC) that includes all major stakeholder beneficiaries of the catchment are mobilised to participate in resource management. The structure at the catchment is replicated at the sub-catchment level. For example the Rwizi river catchment in south-western Uganda has a CMC that has a rotating leadership of the District Chairpersons of the Districts within the catchment. The secretariat for the CMOs is held by Mbarara District Local Government, which designated the District Natural Resources person as the officer in charge. The catchment management activities are supported by both donor agencies such as the German Government through GIZ and private sector located in the areas such as Coca Cola, and the hotels within the area (IUCN 2016).

The implementation of catchment based IWRM only started in 2008 and the set-up of structures is still at an early stage. There are strong opportunities in areas where industrial beneficiaries see clear opportunities such as in south-western Uganda's Rwizi catchment, and the Rivers Mobuku and Nyamwamba catchments in Kasese District. Opportunities for leveraging IWRM with private financing is emerging strongly in some catchments (IUCN 2016; WWF 2016).

The mandate under the Water Act and policy extends to functions such as water supply and sanitation for rural and urban areas. These activities are implemented by the Directorate for Water Development (DWD) and the National Water and Sewerage Corporation (NWSC), a government parastatal company. NWSC abstracts, treats and supplies water to all urban centres across the country and charges a fee for water supplied. The water fees are generally aimed at paying back for the operational costs of water supply but also allow government to charge a user fee for water users. NWSC also provides sewerage services for urban areas, as part of its sanitation mandate. Currently, DWRM is establishing a water source charge to increase investments towards catchment for NWSC and all other water abstractors including private companies and hydropower companies. DWD works with rural growth centres where access to water supply under NWSC is a harder to increase access to good quality water. The water is abstracted from surface and ground sources. Usually, DWD works with District, sub-county, town and municipal authorities to realise the water supplies. The infrastructure is usually set up by central government with co-funding from the Districts and/or beneficiary communities. The plan for managing these water systems under DWD involves working with Water User Associations/committees to maintain the water system. The water use committee

are expected to maintain the water supply facility however, experience shows that DLGs and DWD often step in on their behalf (MWE-SPR 2014).

The Water and Sanitation sub-sector also has a Department for Water for Production (WfP). The mandate of the WfP is to provide bulk supply water to areas close to industrial, agricultural and development centres where it can then be abstracted for industrial and economic development purposes. There is a component of WfP under the MAAIF whose function is to extend water supply from bulk storage created by the MWE to agricultural farms. The components on WfP are generally poorly funded and only achieve a small fraction, usually less than 20% of their mandated duties (MWE 2015).

Sector reports show that the sector agencies themselves such as NWSC, DWD and WfP are not always compliant to the spirit of catchment based IWRM. In the case of NWSC the investment back to the catchment is often interpreted as being minimal because there is no clear environmental damage caused by water abstraction (WWF 2016). Instead, the corporation is heavily invested in minimising sanitation associated with water generated in water and sewage treatment. Nonetheless, there same sector reports also report poor compliance by NWSC on wastewater or effluent standards. With support from government and development partners NWSC is addressing wastewater concerns by decentralising the waste treatment system and developing a project for energy generation and greenhouse gas (GHG) mitigation (MWE 2015).

Forest resource management in the country is built on a policy and regulatory framework divided between NFA, MWE and District Local Governments. NFA manages central forest reserves through maintaining strict conservation areas, production zones for sustainable wood production, and tourism activities. NFA also participates in non-wood forest enterprise activities sometimes through collaborative forest management with communities for bee keeping, firewood harvest, and grazing areas among others. NFA has been actively pursuing participation in the international carbon trade and currently has Clean Development Mechanism (CDM) with credits sold to the World Bank and voluntary carbon projects within the central forest reserves and in the buffer forest areas, i.e. in cooperation with the Environment Conservation Trust (ECOTRUST) trade of Plan Vivo Standard Verified Emissions Reductions (VER) (NEMA 2011). Additionally, NFA has been encouraging commercial forest production by allowing private persons to obtain leases and plant private forests on central forest reserve land which has very low production. The purpose of the commercial forestry arrangement which currently supported with finance from the European Union under the Sawlog Production Grant Scheme (SPGS) is to produce enough round wood to meet domestic demand and in the long-run build capacity for export. The commercial round wood production would reduce the pressure for encroachment on central forest reserves.

The highest risk of deforestation is on private land in Uganda. The deforestation rates are often five times higher than what occurs in central forest reserves (NFA 2009). The fact that by 2005, 64% of the country's forest estate was on private land meant that pressure for development, population pressure, low agricultural productivity, among others were all major drivers for the high rates of deforestation observed (UBOS 2015). There is no clear policy for forest management on private land. Whereas the National Forestry Policy (2001) covers forest activities on private land the mandate for management was placed in the hands of the District Local Government, under the District Forest Service (DFS). given the land tenure status on private land, the DFS can only advise private land forest or tree owners on management, and also regulated products once they have been harvested;



however, they have limited influence on the decisions of private forest owners.

Numerous interventions by civil society organisations such as CARE International in Uganda, the International Union for Conservation of Nature (IUCN), Nature Uganda, Environmental Alert, Advocates Coalition on Development and Environment (ACODE), WWF, and many others are built on changing community attitudes towards unplanned forest harvests and deforestation. Agencies such as UNDP and the United Nations Food and Agriculture Organisation (FAO) support projects on efficient cook stoves, improved charcoal kilns, non-wood forest products, and sustainable land management (SLM) with the aim of reducing the annual wood harvests. The Ministry of Energy and Mineral Development (MEMD) has also developed a Biomass Energy Strategy (BEST) to support efforts of reducing deforestation on private land. Current forest cover trends suggest that minimal impact has been achieved although efforts are on-going to enhance improved and alternative technologies to over harvesting of wood particularly on private land.

Sustainable management of wetland resources is also a major concern for the water and environment sector. The mandate for wetland management in the country is split between the Wetland Management Department (WMD) in the MWE, NEMA and the District Local Governments. Whereas a separate policy on wetlands exists, wetland management is regulated under the National Environment Act cap 153 which is coordinated by NEMA. The Local Government Act cap 243 also empowers Districts to development plans and implement actions on wetland management. The actions on wetland management including restoration actions in response to environmental mitigation proposed through EIAs, restoration orders that are called for by the Authority (NEMA) due to breach of the law by private sector or public institutions, and continuous actions of wetland management implemented by the WMD.

There is considerable intersection in implementation of mandates within the water and environment sector. The management of catchments for instance also involves pollution management which falls within both environmental management as well as sanitation. Similarly, wetlands form a major part of water resources catchments and actions of the catchment committees in many cases involve wetland restoration. The coordination function envisaged, therefore, under the National Environment Act cap 153 served well in allowing for increased institutional cooperation. The spirit of cooperation needs to be maintained in the long-term.



## Policy and practice issues for the Water and Environment sector

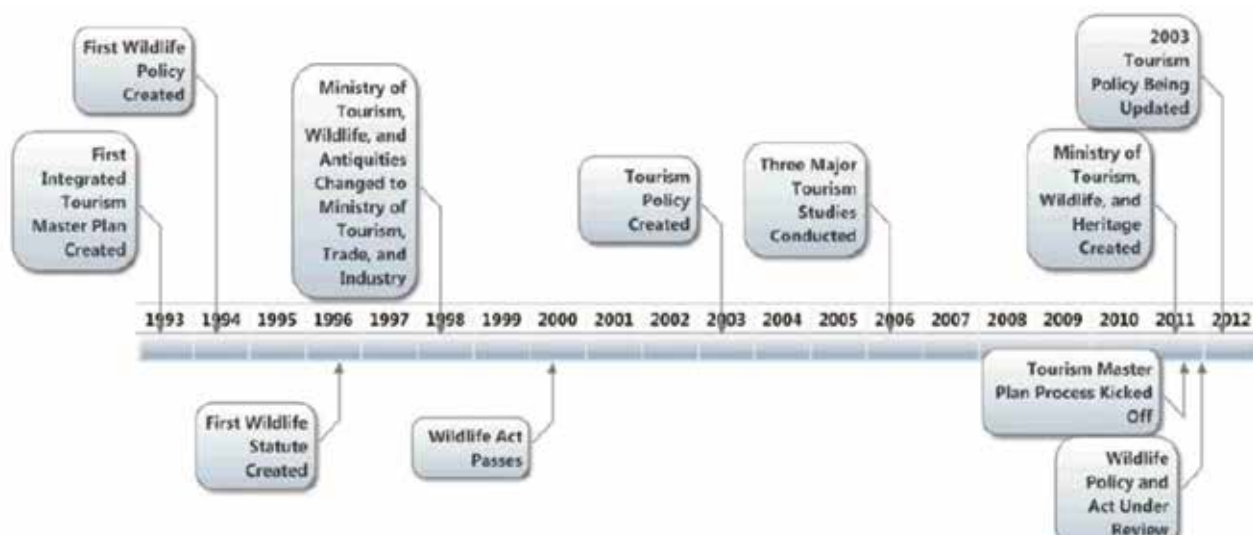
Positive	Negative
<b>Water and Sanitation Sub-Sector sector</b>	
<p>a) The directorate of water Resources management (DWRM) is charged with water resource planning and regulation, resource monitoring and assessment and water quality management.</p> <p>b) Catchment Management was introduced to aid implementation of integrated Water Resources Management. The country's major catchments divided into Water Management Zones Kyoga, Upper Nile, Victoria and Albert Zone.</p> <p>c) DWRM has developed water source protection guidelines in which it requires projects using water to allocate 3% of their investment budget to water source protection.</p> <p>d) DWRM uses effluent discharge certificates and charges to regulate industry point source pollution. DWRM also charges water abstraction fees.</p> <ul style="list-style-type: none"> <li>• e) DWRM participates actively in trans boundary water resource management programmes for Lake Victoria, the River Nile and other shared systems e.g. Sio-Malaba/Malakisi, R. Kagera basin.</li> <li>• f) Hydropower from natural water towers in Rwenzori Mt. R. Nile basin provides major source of electricity in the country.</li> </ul>	<p>a) The largest water abstraction is by government agencies – water for production, electricity hydropower but fees paid too low i.e. UGX 1,000,000 for 10-50 MW. 50-100 MW 5 million, 20 million for over 100 MW.</p> <p>b) Performance on effluent discharge measures only registered companies but many cottage factories not registered.</p> <p>c) Accumulation of heavy metals in effluent discharge for streams in urban areas – affects fisheries, urban water costs.</p> <p>d) Heavy non-point source pollution in urban areas.</p> <p>e) A lot of funds go into infrastructure and increasing water and sanitation through NWSC and DWD, water for production. However, these components show minimal direct support to WRM.</p> <p>f) Outbreak of diseases such as Typhoid in Kampala in 2014/15 linked to abstraction of polluted water. Water tested and found positive for E-coli</p>
<b>ENR Sub-Sector sector</b>	

Positive	Negative
<b>Water and Sanitation Sub-Sector sector</b>	
<p>a) Several specific regulations are implemented for Environmental Impact Assessment and Audit for all developments that impact biodiversity. Other regulations on Hilly and mountainous areas, waste management, ozone depleting substances, wetlands, river banks and Lakeshores are implemented.</p> <p>b) Guidelines on Access and benefit sharing (2007) for biodiversity also exist.</p> <p>c) Management of CFR covered by National Forestry Authority while local forest reserves managed by District forest service.</p> <p>d) Wetlands, traditionally used for effluent treatment, flood control and other provisioning services e.g. water, fisheries, if properly managed.</p> <p>e) NEMA works with lead agencies and District Local Governments to assess and ensure minimal environmental impacts for development by private and public sector.</p>	<p>a) Issuance of land tittles pegged for EIA certificates with mismatch between intended land use and wetland degradation that would or does result</p> <p>b) Whereas standards for effluent discharge exists. It is frequently violated and surface water systems polluted.</p> <p>c) No effective system in place for heavy metal testing and effects fisheries in urban areas.</p> <p>d) A lot of deforestation for biomass, energy and agricultural land continues to occur at very high levels.</p> <p>e) Wetlands in urban areas under pressure for settlements and industry set up. In rural areas wetlands converted for agriculture.</p> <p>f) Participation of land agencies in EIA verification not adequate increases pressure on NEMA to build technical capacity increases funding pressure too.</p>

### 2.3.3 Tourism sector

The 2012 Ministry of Tourism Wildlife and Antiquities (MTWA) and World Bank Tourism Sector Assessment provided a timeline for policy and planning for the tourism sector starting in 1991 up to the time of the assessment in 2012.

**Figure 4: Timeline for policy and planning in the tourism sector**



Source: (MTWA 2014)

The tourism sub-sector derives its mandate from the 1995 constitution. Under Objectives XIII and XXVII and Articles 237(2) and 189 the State required to protect Wild fauna and flora on behalf of the People of Uganda. Tourism activities are also implemented with policy support from the Uganda Wildlife Policy, 2014; Uganda Wildlife Act, Cap 200; Uganda Wildlife Education Centre Trust, Deed (1994) and Universities and other Tertiary Institutions Act.

Uganda Wildlife Strategic Plan for 2013-2018 was developed and approved and it describes plans for management of wildlife and protected areas. Whereas the strategic plan is developed by UWA, National Parks administration comprising of the Area Conservation Warden, the Warden in charge at either a National Park or Wildlife Reserve and the Warden Community Tourism, among others are required to develop General Management Plans (GMPs) for their respective conservation areas and/or national parks or wildlife reserves.

The Uganda Wildlife Policy (1999) was revised into the 2014 policy to address the following challenges that were adequately taken care of, alongside concerns for impacts of climate change, population pressure and security:

- (i) Enhancing protection of areas with high levels of biological diversity that are representative of the major habitats of Uganda;
  - (ii) Sustainable management of Uganda's wildlife populations and protection of threatened and endangered species and their habitats;
  - (iii) Mitigating human wildlife conflicts and enhancing positive attitude towards conservation of wildlife resources;
  - (iv) Ensuring effective public private partnerships in wildlife resources management and conservation policy development;
  - (v) Realizing sustainable management of trans-boundary wildlife resources;
  - (vi) Management of wildlife resources outside protected areas, with Local authorities and rural communities playing a pivotal role;
  - (vii) Management of wildlife populations and conservation areas in accordance with sound conservation principles and standards;
  - (viii) Limited applied wildlife research that directly contributes to wildlife management and conservation policy development;
  - (ix) Ensuring sustainable utilization of wildlife resources for livelihood improvement, conservation and poverty reduction;
  - (x) Limited awareness of wildlife conservation issues among policy makers, local communities and general public;
  - (xi) Combating poaching, illegal wildlife trade and trafficking of wildlife species and or products and associated insecurity;
  - (xii) Inadequate laws and cultural practices that promote the wildlife resource conservation;
  - (xiii) Stiff competition between wildlife conservation as a form of land use and other forms of land use;
  - (xiv) Minimizing negative impacts of oil and gas, mining and tourism development activities on wildlife;
-

- (xv) Inadequate alternative funding sources to finance wildlife sector policies, plans and programs;
- (xvi) Management and control of human, wildlife and livestock disease interface; and
- (xvii) Effective participation in development and implementation of the global conservation policy.

The policy was therefore developed to address the following objectives which represent medium term to long-term approaches to address the biodiversity management concerns to:

- (i) Promote sustainable management of Uganda's wildlife Protected Areas.
- (ii) Sustainably manage wildlife populations in and outside Protected Areas.
- (iii) Promote sustainable and equitable utilization of wildlife resources as a viable form of land use for national economic development.
- (iv) Effectively mitigate human wildlife conflicts.
- (v) Promote wildlife research and training.
- (vi) Promote conservation education and awareness across the nation.
- (vii) Ensure net positive impacts of exploration and development of extractive industries and other forms of development in wildlife conservation areas.
- (viii) Effectively combat wildlife related crime.
- (ix) Promote and support local, regional and global partnerships for conservation of wildlife.

To promote sustainable management of wildlife in protected areas GMPs are developed and physical barriers like trenches, live fences and stone fences are constructed to keep wildlife within the protected area. Even with all these actions wildlife strays out and may damage property and harm human life. Therefore UWA maintains community engagement through education and awareness programmes, community tourism undertakings with the communities as incentives for conservation, resource access arrangements and benefit sharing programmes where a share of the gate collections is returned to the communities that contribute to the maintenance of the protected area. UWA maintains surveillance for wildlife outside protected areas in case they harm human life and when the animals are found they are often recovered and transferred to the Uganda Wildlife Education Centre (UWEC). UWA maintains wildlife users rights on a narrow range species e.g. turtles which can be traded as long as this does not endanger the sustainability of wildlife in the country, private investment in crocodile farming has also been encouraged.

The review also found emerging potential for private wildlife conservation areas under

the supervision of UWA. The two outstanding cases are Ngamba Chimpanzee Sanctuary on Ngamba Islands on Lake Victoria, and the Zziwa Rhino Sanctuary in Nakasongola District. Even though these approaches are novel, they are able to use tourism revenues to maintain chimpanzees rescued from illegal trade and homes across the country, as well as support the re-introduction of Rhinos into National Parks in Uganda.

The Wildlife Policy recognizes, UWEC as the lead agency for conservation education in Uganda. UWEC is responsible for conservation education and awareness, rescue and rehabilitation of wildlife, captive wildlife breeding and management. As part of the education and awareness activities, UWEC organizes a school programme to which schools have guided tours of the zoo and obtain a hands on experience of wildlife management as well as offering internships and workshops depending on demand. UWEC also organizes outreach programs to Districts that are less privileged to extend learning on wildlife management as a contribution to the national education curriculum. Also, UWEC is involved in conservation projects principally wetland restoration and ecotourism in Wakiso District, breeding ostriches for re-introduction in the communities surrounding Kidepo Valley National Park in the Karamoja sub-region (north-eastern Uganda), and developing wildlife education programs on National Parks in the country.

UWEC runs further technical specialist programmes in wildlife management; wildlife rescue, treatment of sick and injured animals, wildlife quarantine services and UWEC also contributes to wildlife species discovery. The government is in the process of developing regulatory instruments strengthening the role of UWEC to perform its duties (Executive Director UWEC Pers. Comm. 2015). Whereas UWEC gets government subventions to support its activities the largest proportion of its budget is funded through fees paid by visitors for a number of experiences at the education centre. These experiences include: forest trails, chimpanzee close ups, day visits especially for schools, keeper for a day programmes for adults and children where visitors can be supported to look after a specific wildlife in the zoo for a day, volunteer programmes and exclusive Very Important Person (VIP) experiences, among others.

Uganda Wildlife Research and Training Institute (UWRTI) serves as the lead agency for wildlife research and training, UWRTI shall be responsible for wildlife research, training and consultancy services. The research and training is conducted in partnership with Universities and other higher training and research institutions involved in wildlife research and training.

The Uganda Tourist Board (UTB) is a statutory organisation established by the government under the Uganda Tourist Board Statute (1994). UTB is mandated to promote and popularize Uganda as a viable holiday destination both locally and internationally in order to: (1) Increase the contribution of tourism earnings and GDP; (2) improve Uganda's competitiveness as an international tourism destination; and (3) increase Uganda's share of Africa's and World tourism market.

Whereas UTB has been noted to have gaps in its marketing capacity especially maintaining presence on electronic/social media and market research, the Board has managed to unveiled impressive display booths voted among the best at International Tourism Trade Fair in Berlin. UTB has also recently secured key donor support from USAID and UNDP for marketing efforts such as UTB web portal <http://www.visituganda.com>, promotional materials, and the "7 Wonders of Uganda" campaign (MTWA/World Bank 2012). UTB maintains a diverse board of governors to ensure maximization of opportunities to enhancing tourism in the country.

## Policy and practice issues for the Tourism sub-sector

Policies and legislation	Practice	
	Positive	Negative
a) The Uganda Wildlife Policy 2014 seeks sustainably managed and sustainable development of wildlife resources the sub-sector covers the actions of Uganda wildlife authority (UWA), Uganda wildlife Education Centre (UWEC), Uganda Tourism Board (UTB).	a) Seeks to pursue biodiversity offsets and payments for ecosystem services. b) Regulates possession, use and trade in wildlife products and specimen through issuing licenses with annual fees payments for vested agents. c) Community revenue sharing between UWA and Districts/sub-counties surrounding the National Parks – off gate collection.	a) The co-existence of infrastructure, minerals e.g. oil and gas and limestone reduces protected area cover and long-term impacts on stability of biodiversity in P.As. b) There are still human wildlife conflicts in some areas, due to large populations linked to tourism economy. c) The quality of tourism facilities sometimes poor, with poor physical planning. The high quality facilities are often very expensive reduces local tourism prospects.
b) Uganda Wildlife Act cap 200 – provides a consolidated law for wildlife management and establishes a coordinating, monitoring and supervisory body for the purpose and incidental matters connected	d) Gate collections and charges for different tourism packages for UWA about 90% of budget financed through own revenue generation. e) UWEC generates revenue through gate collection and packages such as forest trap, keeper for a day, volunteers, and exclusive VIP experience. f) The ministry is engaged in international marketing for wildlife to attract international tourists, locally special rates are created to attract local tourists.	d) Considerable poaching still occurs in major National Parks like Queen Elizabeth National Park. e) Competition from alternative land uses such as suggestions to construct roads through the National Park in Bwindi to promote trade over wildlife conservation and tourism. f) Low local tourism levels.

### 2.3.4 Energy and Mineral Development

According to Uganda's NDP 2010-2014/15 the Government will focus on addressing the infrastructure challenge of high electricity and transport costs, through investing in energy, railway and road infrastructure. The Electricity Act placed in 1999 enabled private participation in the electricity sector, and established the Electricity Regulatory Authority (ERA) which regulates the Generation, Transmission, and Distribution of electrical energy in Uganda. The Rural Electrification Agency (REA) was established as a semi-autonomous Agency by the MEMD under the governing body Rural Electrification Board (REB) to manage the Rural Electrification Fund (REF). REA's vision is "Universal access to electricity by 2035" and has a medium term goal of achieving 10% rural electrification by 2012. Projects supported by the REF include grid extension, independent grids, photovoltaic systems (solar electrification) and renewable energy generation projects.

Uganda's National Energy Policy 2002 (NEP) was developed with the goal of meeting the



population's energy needs for social and economic development in an environmentally sustainable manner. Specific objectives under the energy policy include assessing the availability and demand of energy resources in the country, improving energy service access to reduce poverty, improve governance in the energy sector and institute improved administrative procedures, and stimulate the economic development of the energy sector, whilst minimising environmental impacts.

The Renewable Energy Policy 2007- 2017 (REP) followed from NEP 2002 and seeks to develop and utilise renewable energy resources and technologies. The policy goal is "to increase the use of modern renewable energy from the current 4% to 61% of the total energy consumption by the year 2017". The objectives include increasing access to modern, affordable and reliable energy services as a contribution to poverty eradication. The specific considerations in the policy are increased public access to electricity and modernisation of biomass conversion technologies. REP also established a Standardised Power Purchase Agreement and Feed-in Tariffs for renewable energy generation projects.

NDPII identified key issues as barriers to further energy sector development, including high power tariffs, and the limited extent of the national grid. Other key energy subsector challenges include the lack of a good mix of energy sources in power generation; low level of access to modern energy; inadequate infrastructure for generation, transmission and distribution; low level of energy efficiency; inadequate Institutional and regulatory capacity (GoU 2015).

The Energy and Mineral sector has important and large concerns for biodiversity management and finance in the country. The energy sector covers: hydro-electric, traditional fuel generation, coal, petroleum exploration and extraction, biomass energy – fuel wood, co-generation from biomass energy sources – peats, solar, etc. Mineral resources includes all other mining, and non-energy extractive industries. Both energy and mineral development can have significant negative impacts including polluting water resources. Also, land taking for minerals including oil and gas leads to biodiversity loss. While poor waste management may also lead to other important impacts.

Generally, policy implementation especially on core sectors such as energy has been poor. Whereas, the energy sector has worked on a strategy for sustainable renewable energy the implementation at the local community and household level is generally limited. Indeed, indicator for deforestation suggest that the energy demand is a strong driver for deforestation. It must be noted that the National Biomass Energy Strategy has proposed options on agricultural residues and minimising losses during charcoal production; however, these have not been adopted as national programmes, in the NDP, for instance. The large gap between central government sectors, Local Governments and individual households where most of the decision making takes place points to the inadequacy of the instruments and/or implementation mechanisms.



## Policy and practice issues for the Energy Sub-sector

Policies and legislation	Practice	
	Positive	Negative
<p>a) The energy policy for Uganda (2002), The Renewable Energy Policy (2007), The National Biomass Energy Strategy (2001-2010)</p> <p>b) Legislation include The Electricity Act (1999), The Biomass Energy Strategy for Uganda</p>	<p>a. Uganda's new hydropower projects have designed biodiversity offsets to cover for impacts not covered by other environmental mitigation actions. This is a positive approach, which does not have a clear implementation mechanisms. There are opportunities for translating the intentions into financing for biodiversity conservation.</p> <p>b. Uganda is implementing a new Biomass energy strategy aimed at increasing efficiency of fuel wood production and streamlining the sub-sector – value chain – to increase and regulate revenues.</p> <p>c. The increased focus on co-generation of energy by sugar companies, and use of water for energy in oil palm processing, cement processing are helping to save energy from wood fuel, which also leads to deforestation.</p> <p>d. Introduction investments under the climate investment fund will expand renewable energy options including wind, solar and geothermal as well expand energy to many parts of the country.</p> <p>e. The feed-in tariff programme, allows private energy investors to supply electricity to main grid and get paid. This leads to savings on public investment, allows more private fund into energy.</p> <p>a) - At domestic semi-commercial levels, the Uganda Domestic Biogas Project, under Heifer International is supporting increased power access for livestock owning households.</p>	<p>a. Biomass is the single largest source of energy for households and industry, contributing more 90% energy needs. This is the leading cause of deforestation.</p> <p>b. The largest concern are growing urban demand for charcoal which is produced using extremely inefficient charcoal kilns with efficient of 1/6th of high quality kiln.</p> <p>c. The lack of a clear value chain for charcoal and wood fuel encourages illegal harvesting on private land, central and local forest reserves.</p> <p>d. Poor governance of the regulatory process of fuel wood and charcoal, means fees paid for charcoal licenses and fines are the little to be effective in controlling the proper charcoal production.</p> <p>e. Where regulatory processes are poor hydropower options can have significant impacts on surrounding forests and wetlands. Through leakage as populations grow due to dams, settlements, farms and energy harvesting may cause excessive biodiversity loss.</p> <p>a) - The fees paid as water resources permit fees are too low and not commensurate to services obtained.</p>

## Policy and practice issues for the Petroleum sub-sector

Policies and legislation	Practice	
	Positive	Negative
<p>a) Petroleum supply Act 2003, The Petroleum supply (General) Regulations 2009. National oil and gas policy for Uganda. Petroleum (Exploration and Production) Regulations, Petroleum (Exploitation, Development and production) Act 2013, Petroleum (Refining, conversion, transmission and mid-stream storage Act 2013). The mineral Policy of Uganda 2000, the mining Act (commencement), instrument, 2014 mining regulations A and B. The public finance management Act, 2015 oil and gas revenue management policy 2012</p>	<p>a) The oil and gas revenue management policy (2012), provides for royalties, revenue sharing with local governments within producing region.</p> <p>b) The National oil and gas policy empowers NEMA and Environment Act to provide environmental management support for oil and gas sector. The existence of a base policy is a good starting point. This will support future commitment from Government and stakeholders.</p> <p>c) The on-going revisions in the environment policies and laws allow for use of PES, biodiversity offsets and other economic instruments.</p> <p>d) Design of comprehensive waste management for oil and gas wastes, use of EIAs and Environment Audits provide a starting basis for biodiversity conservation</p> <p>e) NEMA is designing economic instruments for environmental regulation of oil and gas sector which will improve regulation for the sector impacts, including biodiversity.</p> <p>f) Relationship between environmental regulators and oil and gas companies and government agencies as part of oil and gas stakeholder committees allow room for checking future impacts.</p> <p>g) The major oil exploration and development companies (Total ENP and Tullow) have shown strong willingness to integrate environmental best practices in their operations.</p> <p>h) The government are working with development partners to build the capacity of the NEMA and lead agencies. This capacity building support needs to be institutionalised and maintained.</p>	<p>a) Acquiring concessions to mine or/and explore and produce oil and gas in the National Parks and other protected areas often affects biodiversity and builds long-term pressure for degradation. Moreover, currently no clear financing mechanism other than offsets seems to fully integrate costs.</p> <p>b) EIAs are not as effective as the regulations would suggest...</p> <p>c) Considerable midstream and downstream investments are planned including oil and gas storage, a refinery and pipeline. Whereas considerable biodiversity planning is taking place in the Albertine Rift where impacts could be high the potential impacts will spread to many other parts of the country.</p> <p>d) The plans for local content development whereas positive increasing revenues create pressure to produce oil producing crops for biodiesel that can be mixed with processed petroleum. This will lead to pressure for genetically superior crops, increased land conversion for production and trade-offs over farm diversity to produce more income generating crops.</p>

## Policy and practice issues for the Mining sub-sector

Sub-sector	Policies and legislation	Practice	
		Positive	Negative
	a) The mineral Policy of Uganda 2000, the mining Act (commencement), instrument, 2014 mining regulations A and B. The public finance management Act, 2015 oil and gas revenue management policy 2012	a) Design of comprehensive waste management for oil and gas wastes, use of EIAs and Environment Audits provide a starting basis for biodiversity conservation  b) NEMA is designing economic instruments for environmental regulation of oil and gas sector which will improve regulation for the sector impacts, including biodiversity.  c) Relationship between environmental regulators and oil and gas companies and government agencies as part of oil and gas stakeholder committees allow room for checking future impacts.	a) The disposal of mineral in some parts in Kasese District for instance (copper wastes containing heavy metals) has had significant impacts on fisheries and quality of water resources.  b) Acquiring concessions to mine in the National Parks and other protected areas threatens the entire system of protected areas and clearly impacts biodiversity and builds long-term pressure for degradation. Moreover, there is no clear financing mechanism other than offsets seems to fully integrate costs.

### 2.3.5 Works and Transport

The Works and Transport sector has considerable impacts of biodiversity where physical infrastructure investments are undertaken. Impacts on wetlands, forest biodiversity and water resources are quite significant. On private land, often large claims are made in terms of compensations. Such compensations are avoided on public land, which may often cause abuse of wetlands, and other public resources. None the less, where the governance mechanisms exist, government has often been willing to compensate the NFA and UWA, although compensations for wetland have often been ignored.

In submission to the National Environment Management Authority (NEMA) during the review of Environment Impact Assessment (EIA) and Environmental Audit Fees, the Uganda National Roads Authority (UNRA) indicated that the fees rate, at 0.1% of the project cost was too high and was likely to reduce the economic viability of road infrastructure in the country, thus threatening the opportunities for funding for Road projects in the country (NEMA 2016). This perception on contributions to environmental management interferes with the economic viability assessments themselves as it would show that the environmental costs and benefits are not fully catered for in the

assessments of viability and/or feasibility of road projects.

Agencies under Ministry of Works and Transport have also indicated for instance that public good nature need a waiver on the EIA fees because the Works and Transport sector often faces delays in accomplishing this requirement due to the large size of funds that have to be mobilized. The agencies have also indicated that allocation of funds towards EIA fees reduces resources available for road construction and influences implementation of project. Non-timely payment of EIA fees by UNRA causes delays in roads projects, as development partners' delay to disburse funds, the economic impacts of such delays are often substantial. However, these arguments when used to support fast-tracking of infrastructure projects lead to considerable biodiversity loss with no mitigation actions and/or remedial action. Moreover, if there are any costs for environmental remediation the cost is passed on government and private citizens, when such costs could have been avoided (NEMA 2016).

Nonetheless, the Works and Transport sector and the main agency UNRA indicate that the environmental regulators need to bridge the gaps between international requirements and technical feasibility and national conditions, remove barriers that could lead to delays to prepare and approve ESIA and harmonise EIA process with other national legislation and regulations, strengthen transparency of Environment and Social Impact Assessments (ESIA) processes and ensure thoroughness of methodology especially on impact identification to avoid omission of sectors, issues and generalities (NEMA 2016).

## Policy and practice issues for the Works and Transport sector

Policies and legislation	Practice	
	Positive	Negative
<p>a) National Transport Strategy, Public Private Partnership Policy Framework 2010, National Transport Master Plan, National Construction Industry Policy, The premise on road network includes need to conserve the ecology and environment for future generations</p>	<p>a) The Ministry of Works and Transport has an Environment Liaison Unit (ELU) while UNRA has a component on environmental mainstreaming with a fully-fledged Environmental senior officer.</p> <p>b) The performance golden indicators for the sector. The air pollution emissions include parts per million releases carbon dioxide, carbon monoxide (No X); Number of EIAs accepted by NEMA against total number of EIAs required.</p> <p>c) Additional considerations on environmental compliance, audits as part of construction standards quality assurance.</p> <p>d) Strategic Environmental Assessments are conducted for many projects. The strategic Assessment allows for exploration of wider ecosystem and integrated impacts.</p> <p>e) Considerable infrastructure has been developed to support access to hydropower projects, tourism sites and agricultural markets in a manner that supports sustainable enterprises.</p> <p>f) Works and transport has been exploring developing Naturally Appropriate Mitigation Actions</p> <p>g) - Common mitigation Actions for EIA include tree planting, forest and landscape restoration</p>	<p>a) Encroachment on wetlands and surface water systems associated with major works projects especially roads.</p> <p>b) There is very narrow scope of focus limited to EIA and Environmental Audits; and sustainable strategic natural resource management does not seem to feature adequately.</p> <p>c) There are no other economic instruments or clear biodiversity finance mechanisms</p> <p>d) Works and Transport sector a major consumer of wood fuel.</p> <p>e) The management of wastes in works and transport sector if poorly conducted can lead leakage and loss of soil based biodiversity plant and animal diversity</p>

## 2.4 Market forces, financial, economic and other Drivers of Biodiversity Trends

### 2.4.1 Broad Drivers

- 1. Demographic factors (population growth rate, density and age categories):** Uganda's high population growth rate of 3.2% per year (UBOS 2014) has been recognized by the National Vision 2040 as unsustainable (GoU 2012). A more sustainable population rate of 2.4% has been proposed instead. The high population rate causes degradation of forest, agro-ecosystems, wetlands and surface water systems in densely populated areas. The high population growth and density increase demand for biodiversity and create pressure to harvest beyond sustainable levels. Moreover, the younger population of under 15 is nearly 50% of the country's population therefore future pressure will certainly be higher than current pressure.
- 2. Technology Adoption Rate/Productivity:** The productivity of agriculture, industry and natural resources sectors harnessed for livelihoods purposes is generally dependent on the level of technology in use. The use of pesticides, herbicides and other chemicals in agriculture, for commercial farms, can be undertaken judiciously to reduce external impacts. However, many local farming systems are not prepared for such precision farming. On the other hand, current subsistence agriculture is highly depletive of soil resources and certain value chains encourage soil mining due to low value addition at source and poor return of agricultural refuse for manure. Uganda is a leading organic producer and since 2008 the country has had the largest number of smallholder agricultural households engaged in organic agriculture (NOGAMU 2015). Conservation agriculture practice would allow for sustainable agriculture value chains that have already benefited Uganda's international market for Arabica coffee (Masiga and Ruhweza 2007). Even though the country has individual agricultural commodity policies and agencies, e.g. for coffee and cotton, which allow for sustainable production, a wider sustainability policy in agriculture has not yet materialised despite numerous efforts (Tumushabe et al. 2008).
- 3. Expansion in urbanization and industrialisation exert pressure on peri-urban forests, wetlands and urban centres.** The pollution pressure on Lake Victoria due to point source and non-point source pollution has resulted in transformation of the lake vegetation and loss of important livelihoods for fisheries, water transport and the loss of the tourism industry, among others. This loss has been the result of wastewater discharged from industries due to abuse of existing pollution control regulations, and/or inability to adequately monitor and halt industrial pollution activity. Uganda has a low urbanisation rate of 15 to 18% and it is expected that over the next 15 to 25 years the urbanisation rate will soar to over 30% (MWE 2016). There are ongoing efforts to develop strategic, and physical plans for urban areas; however, these efforts have often been slow and incomplete. Highlighting this importance to larger stakeholder forums may re-ignite these efforts again.
- 4. Climate variability, climate change and other natural impacts.** Climate variability especially in fragile mountain ecosystems, wetlands and rangeland areas results in heavy degradation occurring very quickly. The low resilience to climate change and other forms of disaster means that innovative and traditional means of production are lost and unsustainable harvest of natural resources is the fastest recourse. The pressures in the Mt. Elgon ecosystems have been highlighted by the UNDP Ecosystem Based Adaptation studies with strategies for long-term adaptation in the agricultural



landscapes (UNDP 2015). Similarly, the pressure from industry, agriculture, large scale land use for conservation in densely populated areas of Mt. Rwenzori has recently been highlighted in studies conducted by WWF (2015). These efforts need to be coalesced with ongoing efforts in the Ministry of Water and Environment to develop a Mt. Landscapes Management Strategy.

- 5. Environmental management compliance:** The ongoing review of the National Environment Management Policy and the National Environment Act and its regulations has highlighted major concerns over environmental compliance. The concerns seem to stem from the projects that have major impacts on the environment through both small cumulative impacts e.g. construction of fuel stations in wetlands, to larger projects that cause conversion of wetlands and forest areas e.g. industrial parks and infrastructure projects. The concerns are that the regulators may not have adequately assessed and/or predicted the impact that would occur, and/or mitigation actions or instruments proposed were not commensurate, often much lower than required. Adequately addressing these compliance concerns requires technical capacity building, improved design of instruments, and a strong commitment to enhance the assessment of environmental impacts and assign the appropriate level of regulation.

#### 2.4.2 Sector specific broad drivers

##### 1. Forestry

The cause of the high deforestation rate has mixed causes and progression. Many areas in Eastern Uganda such as Butaleja and Mayuge Districts have reported historical illegal logging as a cause for deforestation observed. However, generally illegal logging has often targeted poorly managed forests e.g. Kafumbi central forest reserve in Buikwe District (CIU 2015). The most common progression for deforestation in Uganda is encroachment usually from settlers from outside the immediate community, who harvest the large trees for timber. The settlers from outside the community are joined by the community to harvest logs, and this transitions into charcoal production as the timber logs are exhausted. As this is taking place other members of the community clear the bushes left behind for crop production.

Estimates conducted by the National Forestry Authority shows that converting 1 hectare of well stocked forest into shrub land means a reduction in biomass from about 328 tonnes/ha to about 10 tonnes/ha (NFA 2009). Where deforestation has been observed interventions at different stages can reduce the extent of damage that occurs. Deforestation due to excessive timber logging degrades a forest but at least some trees that are not good for timber may be left standing. Such trees include those of poor form and the species are not good for timber. In the case of harvesting for fuel, all the wood irrespective of form or species, are harvested. While for charcoal production, there is preference for particular species of high density like *Combretum species*. However, as scarcity comes in, such preferences cease. What matters is wood that can produce charcoal for sale. Areas near markets such as those in one hours' drive to Kampala have suffered a lot.

Forested areas that were near urban areas have eventually also been cleared for infrastructure and construction. Forests around Kampala and in Wakiso districts have become built up areas or have been cut to feed energy-hungry urban activities such as

brick making, bakery, and domestic cooking. Economic development and urbanisation has also contributed in terms of construction.

## 2. Wetlands

The principle reason for wetland conversion is their public good nature of ownership for wetlands where there is open access to the resource. In many urban areas the wetland areas are left aside without demarcation and existing land use planning. Therefore, rural migrants and other landless people target the wetlands for settling down (MWE 2016). This is the case because in rural areas many of the wetlands are on private land and have some form of land use. The clear ownership of wetlands in rural areas and presence of land use seems to protect these wetlands from the heavy encroachment that is observed in urban areas. Indeed, whereas the wetlands of the River Rwizi catchment are crucial to the water supply in Mbarara Municipality, one of the five leading urban centres in the country, pressure on the wetlands has continued to increase as the level of urbanisation increased. Private people have exploited the loophole of government ownership of wetlands and the lack of clear supervision to convert these wetlands. The current approaches pursued by the R. Rwizi catchment management therefore provide use rights to communities and the power to enforce exploitation of ecosystem services that benefit the entire community, thereby reversing the wetland conversion efforts of private individuals.

Paddy rice production in wetlands continues to be a major driver of land use change that threatens wetland biodiversity. The higher productivity of paddy rice over upland rice continues to be a major driver as is the growing demand for rice due to population growth and the expense of imported rice.

## 3. Agriculture policy

In 2013, the Ministry of Agriculture developed a new agriculture policy to provide overarching guidance for all the environmental policies in the sector. The focus of the environmental management actions in the new policy are on periodic mapping and documentation of the state of agricultural resources, regulating exploitation of agricultural resources to maintain ecologically sustainable levels, promoting technologies and information on use and conservation of agriculture resources, and promotion of land use planning. The lack of an explicit description of the interactions between agricultural practice and other ecosystems such as forests, wetlands, and freshwater ecosystems is significant given the explicit approach pursued in the earlier Plan for Modernisation of Agriculture (PMA). Moreover, the Agriculture Policy (2013) seems to borrow considerably from the PMA.

Agriculture production in Uganda has major contributions to environmental performance of forestry, wetlands and freshwater ecosystems. Efforts to optimise the benefits and minimise degradation need to be explicitly articulated for farmers, extension workers and natural resource managers. Therefore, the lack of clarity on interactions between agriculture production and other ecosystems and ecosystem services may need to be addressed in the early stages of implementation of the agriculture policy.

#### 4. Fisheries

Fisheries management falls under the National Fisheries Policy 2004. The fisheries industry is largely artisanal and is based on inland capture fisheries from the rich water resources that cover about 18% of the country's total surface areas. About 2.5% of GDP and 12% of agricultural GDP comes from fish; and the sector supports the livelihoods of nearly 5.3 million people including youth and women through direct involvement in fishing, fish processing and trading. Fish are also a major source of animal protein with fish consumption estimated at about 10 kg/ capita – slightly below the recommended WHO level of 12.5 kg/capita (NEMA 2012).

During the late 1990s and early 2000s, the Government and its Directorate of Fisheries Resources (DFR) encouraged large investments in fish processing for export based on Uganda's capture fisheries. Over 20 medium to large scale factories were licensed and at the time it was reported that Uganda's fisheries production was about 220 million tonnes/ year of fish with about 60% of that being exported to Europe. The Maximum Sustainable Yield for Uganda's capture fisheries had been set at 330 million tonnes/year (MAAIF 2004). When capture fisheries began to decline and an audit was carried out by DFR it was discovered that the fish capture data had not been updated for 15 years, and indeed the fisheries production, much of which was based on the Lake Victoria fishery had been over 400 million tonnes/year for at least 10 years. Between 2005 and 2010, Uganda's capture fisheries production dropped to about 80 million tonnes/year. Fifteen of the over 20 licensed fish factories that has been licensed closed due to low production (Commissioner DFR Pers.Comm. 2015). After a five-year decline between 2006 and 2010, fish catch from Lake Victoria increased from 185.5 million Mt in 2012 to 193 million Mt in 2013. The recovery in fisheries is due to capture fisheries and growing pond and cage fish farming activities. Fish farming activities boost fish production but also present environmental management challenges, especially when conducted in the freshwater systems; lakes and rivers and environmental compliance needs to be expedited.

Whereas Beach Management Units (BMUs) were introduced as part of implementation of the fisheries policy, the attempt to reduce the fishing effort through controls led by fishing communities themselves have not been successful. The BMUs were poorly regulated and the collusion between fish traders and the BMU leaders lead to a proliferation of lucrative trade in immature fish. There is a strong regional market for immature fish especially in the Democratic Republic of Congo and locally in Uganda and has had a significant impact on the stocks in the fishery. The District Local Governments and the DFR were able to adequately stem the harvest and trade of immature fish. Consequently, the government in late 2015 decided to halt the activities of BMUs. The District Fisheries staff and DFR have been left in charge of fisheries management on their own. However, this restriction of fisher participation in management and could lead to increased open access.

#### 5. Tourism, Trade and Industry sector drivers

There is high population density in areas neighbouring important protected areas – for example this includes areas such as Bwindi Impenetrable National Park, and Mgahinga Gorilla National Park, Rwenzori Mt. National Park and Mt. Elgon National Park. Moreover, the communities depend on the land resources through subsistence agriculture and conflicts with the park authorities occur frequently.

Low earnings, community skills and opportunity cost concerns – low earnings from tourism in comparison to alternative land use and the low human resource skills of community could make the consideration of the opportunity cost of maintaining sections or entire parts of the P.A compared to commercial monoculture farms e.g. tea in south-western Uganda and sugarcane in Central, Mid-western and Eastern Uganda.

The level of knowledge, understanding and participation in management of the resources in the park are drivers for encroachment and poaching. Communities where the benefits are clear have a reduced tendency to encroach.

Illegal trade – Uganda like a lot of other countries is a target for illegal international trade in wildlife. Whereas Uganda has wildlife user rights for wildlife outside protected areas, there are still incidents of poaching for elephant tusks, illegal capture of rare bird species. Whereas PAs are habitats for wildlife, they also contain a lot of mineral resources. Therefore, the government has to frequently respond to requests for incursions by private mineral exploiters. As the level of mining activities grows the dangers on the PAs as a habitat for wildlife grows.

## 6. Energy resources

### Biomass

Uganda's growing population relies on biomass fuel for domestic cooking, institutional and industrial heating. The Energy Policy (2002) and the subsequent Renewable Energy Policy (2007) realised the high dependence and sought to improve efficiency and increase electricity production. However, this process has been very slow. The high dependence on wood fuel has been compounded by the poor conversion efficiency of traditional charcoal stoves whose efficiency of only one-sixth of best available technology. While the rural communities depend on firewood the burgeoning urban population which currently stands at 15 to 18% of the national population and is expected to reach 45% by 2050 mostly depends on the inefficiently produced charcoal (MWE 2016).

The high demand for wood fuel and poor charcoal kiln conversion technology is currently the leading cause of deforestation having replaced conversion for agriculture and other land uses (UBOS 2015). There is need to urgently address the high consumption of biomass for energy is the most immediate biodiversity conservation concern for the forestry sub-sector.

Conversion of forestry for other land uses still occurs at a relatively high rate. A case of the 365 ha Kafumbi central forest reserve in Buikwe which was almost entirely deforested with a combined encroachment of settler fishing communities and the neighbouring communities.

### **Figure 5: Forest land conversion in Bufumbe/Kafumbi CFR, Najja sub-county, Buikwe District**

A cost-benefit analysis conducted by Care International in Uganda (CIU 2015) showed that timber incomes were often higher than revenues from charcoal, fuel wood or even agriculture and fisheries. Therefore deforestation for timber was very aggressive that more than 60% of the forest was deforested in two to three years without intervention of NFA. The subsequent deforestation for charcoal, poles and agriculture has been largely done by local communities while the settlers who benefited from the timber may have since moved onto other activities. NFA and local leaders failed to immediately respond to initial concern of deforestation and when they responded the effort was too little and rather late. Instead, the communities have now sought the intervention of NFA on realising the impacts of deforestation, through loss of medicinal plants, irregular access to fuel wood and unsustainable harvest of timber.

## **7. Hydropower**

Mini-Hydropower production in Uganda largely relies on well-maintained catchments. The highest mini-hydropower production in the country occurs in Kasese District where about 30 megawatts of electricity is currently being produced and the potential could top 50 megawatts within two-years (ERA 2015). There are several competing land uses in areas where hydropower station facilities are being set and this heavy investment in land take can have important long-term effects such as floods seen in Kasese District.

The major concern in hydropower generating landscapes is the deterioration of the wetlands and forest ecosystems that support the catchment. The immediate impacts for hydropower firms and neighbouring industries are siltation and landslides that cause closures and loss of production and income. However, stakeholders within the landscape are concerned that the catchment might also suffer loss in water quantity in the long-term (WWF 2015).

Under the leadership of WWF, the Albert Water Management Zone and the District Local Government sub-catchment management plans are being developed for R. Mubuku and R. Nyamwamba. The sub-catchment management plans also include design of water catchment stewardship arrangements with communities and engaging communities to participate in the sustainable management of the river catchments. Similar catchment arrangements are being planned in other major catchments across the country. However, the effort has been quite slow and many times the implementation has been adequate; this is some associated with lack of baselines and performance assessment and/or efforts to make improvements where poor performance has been observed.

The experience for the larger hydropower stations was that such catchment management plans were absent. The Kalagala offsets which were established for Bujagali hydropower station is the only one established in the country. Moreover, the implementation of the Kalagala offset has suffered considerable setbacks at implementation, and needs to be revamped. More importantly, the application of such instruments needs to be standardised.

## 8. Minerals & petroleum:

In 2006, the Government of Uganda announced that it had discovered commercial quantities of crude oil and gas in the Albertine Rift, and sought to develop the resource for export. Between 2006 and the current time, Government development policies and regulations for the management of oil and gas resources. Alongside the development of the oil and gas resources were efforts to ensure that the exploitation of the resources can be done without causing major environmental damage. Strategic environmental assessments, and guidelines for environmental management for the sector were developed as a result (NEMA 2012). The oil and gas sector as a new sector still presents major concerns especially with regard to proposed developments by the government. For instance, the government is establishing a refinery in Hoima District and a pipeline is planned to connect the oil producing areas to an export port, in either Tanzania or Kenya. The refinery also adds the risks for spillage and contamination of the ecosystems of freshwater and agricultural land.

A lot of the commercial quantities of oil have been discovered in Murchison Falls National Park (MFNP) which is one of the three leading conservation areas in the country; alongside Bwindi Impenetrable National Park (BINP) and Queen Elizabeth National Park (QENP). Wildlife disturbance, and interference with tourism activities are envisaged. To date, many actors agree that not enough instruments have been put in place to mitigate the potential environmental damage and forestall the likely tourism revenue losses once commercial oil and gas activities begin (NEMA 2016).

The mining sector in Uganda has a long history of environmental impacts that have not achieved environmental compliance standards. Copper mining in the Kilembe mines of Kasese District left considerable volumes of wastes which leached into the nearby freshwater ecosystems (NEMA 2001). Whereas a biological process was set up for recovery of cobalt using wastes from the Kilembe mines, Kasese Cobalt Company Ltd (KCCL), the factory has been closed for the last five years when it run out of cobalt deposits. However, the concerns of copper deposits and the environmental impacts have never been fully addressed (WWF 2015). There have been greater efforts with limestone mining, although some of it in south western Uganda occurs in QENP; however, many illegal cottage mining activities especially for gold in Busia, Buhweju and Mubende Districts and the Karamoja region are unregulated.

The Minerals Policy (2000) sought to attract private sector investment to enhance exploitation of the countries mineral resources. In 2003, the government developed a Mining Act (2003) and a Mining Regulation (2004). An assessment conducted by the International Institute on Sustainable Development (Crawford et al. 2015) identified the strengths in Uganda's mining law and policy framework, in terms of the requirement for EIA and public engagement in the process, the use of exploration licenses and mining leases which provide for community participation, the collection of royalties, and income taxes which are often shared with local communities, the requirement for an environmental restoration plan and efforts to formalise artisanal and small-scale mining operations.

The major weaknesses identified were the limited capacity to implement the laws and regulations and the pervasive weakness of the regulatory environment, the inadequacy



of the law in addressing mining closures and the lack of financial resources to cater for subsequent environmental management actions, the EIA does not provide for adequate baseline assessment and therefore the assessment of management ex post is absent. The royalties and taxes paid often do not reach the communities in practice, and there are no long term plans to help improve welfare of affected communities. Even though government has expressed interest to formalise and standardise artisanal and small scale miners the evidence on ground points to limited actual movement.

## **9. Works and Transport sector drivers:**

Economic pressures: the need for infrastructure for Uganda is important as Uganda lost too many years to political turmoil and economic reversals. To ensure that all citizens have access to social services, markets and opportunities considerable development is required. Moreover, existing infrastructure is sometimes poor and needs to be replaced.

Many times the pressure for expedience has often led to poor environmental compliance. Due diligence for environmental compliance has many times been compromised as projects are fast tracked. Increasing pressure for use of public land for infrastructure also affects wetlands and forest areas and currently inadequate instruments for compensation and/or mitigation of these losses exists. However, the ongoing revisions of the National Environment Act are making an attempt to address these.

The built up areas in Uganda increased 10-fold between 2000 and 2010 (UBOS 2014). This is associated with the huge growth in real estate and settlements in and around urban and peri-urban areas, which has created a housing industry boom. However a lot of this growth is poorly regulated (MWE 2016). Therefore, the conversion of wetlands and forest areas and use of fragile lake shore and major wetland areas for housing purposes has continued to occur.

The need to expedite spatial planning and the drive to include strategic environmental planning has been highlighted in the National Environment Bill 2015. Many times, implementation of such regulation in urban areas suffers considerable political interference and strong political engagement on these matters will be needed. The National Environment Bill 2015 when passed will have a strong focus on development of appropriate instruments and/or regulations to expedite the required regulatory reforms.

## **2.5 Biodiversity status and trends**

The Uganda National Biodiversity Strategy and Action Plan adopted the convention characterisation of biodiversity where biodiversity is defined and organized by ecosystem diversity, species diversity and genetic diversity. With regard to biodiversity conservation in Uganda, the current primary focus is on ecosystem diversity while there are also strong conservation efforts for species diversity. These species diversity initiatives are efforts of national conservation agencies with support from international and national non-governmental organisations (NGOs) and civil society organisations (CSOs). The focus on genetic diversity is largely at the educational and research level. However, a new bill, the National Biotechnology and Biosafety Bill 2012 provides a regulatory framework for biotechnology, is before the National Parliament and this could increase focus on genetic diversity in future biodiversity management.

## 2.5.1 Ecosystem Diversity

### 2.5.1.1 Land cover status and trends

The starting point for ecosystem diversity is the land cover (*Table 1*). The largest land use in the country is agricultural land, followed by grasslands, bush lands and forest land. Built up areas, wetlands and impediments make up the smaller land uses. Therefore, richness of ecosystem biodiversity was highest in forest ecosystem, grasslands and wetlands ecosystems. Savannah grasslands were important landscapes for wildlife conservation as national parks and wildlife reserves. The built up areas which for many years were stable experienced significant expansion between 2005 and 2010 as farmlands are converted into built-up areas (UBOS 2013; 2014). The area under bush lands increased dramatically in direct relation to the decline in forest cover. It does seem that what is cut for timber and wood fuel degrades to bush lands. Whereas between 1990 and 2005 the decline in forest cover was associated with increased conversion of land for agriculture, it seems that the more recent forest conversion is less driven by agriculture as it is by the demand for wood products. The pressure towards deforestation is the single most significant form of ecosystem change observed in Uganda's land cover.

**Table 1: National Land cover statistics (km<sup>2</sup>)**

Land cover type	1990	2005	2010
Built up areas	365.7	-	4,966.6
Bush lands	14,223.9	11,893.6	24,705.9
Agricultural lands	84,694.5	99,703.1	91,151.8
Grasslands	51,152.7	51,152.7	53,153.3
Forest land	49,333.6	36,654.8	26,198.8
Water bodies	36,902.8	36,902.9	36,527.4
Wetlands	4,840.4	4,840.4	4,500.0

**Source: UBOS (2013; 2014)**

### 2.5.1.2 Forest ecosystems status and trends

According to the National statistics office (UBOS 2015) forests contributed 3.5% to national GDP. However, a study on the economic contributions to the national economy found that the forestry sector contributed US\$ 1.277 billion/year, about 8.7% of national GDP in 2010 (NEMA 2011). In 2014, Uganda produced 46.6 million tonnes of round wood worth UGX 774 billion, registering an increment of 12.1% in value from 2013, a round wood production increase of 1,896,000 tonnes (4.1%) in 2014.

The principle use of wood in Uganda is for energy for heating, cooking and lighting among households and at commercial level. According to the Ministry of Energy and Mineral Development (MEMD 2014), the National energy balance comprises of biomass 88.9% (fuel wood 78.6%, charcoal 5.6% and agricultural residues 4.7%), petroleum products 9.7%, and electricity at only 1.4% of the total national energy balance. Most of the fuel wood is used for cooking utilizing the highly inefficient three stone cook stoves especially in the rural areas where most of the population lives.

The majority of the country's forest cover is located on private land. However, due to the higher rate of deforestation on private land the proportion of forest on private land declined from 70% to 64% between 1990 and 2005 (Table 2). The forest cover under UWA has edged over that under NFA due to the stability of forest cover in the national parks and wildlife reserves compared to that in central forest reserves where forest production and encroachment are more common. Less than 1% of the forest cover is under Dual-Joint Management (DJM) between NFA and UWA and this usually covers ecosystem boundaries and/or area where central forest reserves and national parks or wildlife reserved intersect. Local forest reserves are the smallest area under forest cover and also the most encroached due to the low capacity and oversight at the District local government level.

According to national statistics Uganda's forest land cover declined to 2.6 million ha of forest land in 2010, and to 1.96 million ha in 2015 from a forest area of 4.9 million ha in 1990. This is a reduction of 57% of the country's forest cover in just 25 years. As recent as 2005, Uganda had a total of 3.6 million ha of forest land compared to 4.9 million ha in 1990 a reduction of 30% over a period of 15 years. However, there was acceleration over the 2005 to 2010 period to annual rate of loss of 7.2% per annum from 1.8% annual forest loss between 1990 and 2005. Even though the rate of forest loss seems to have declined to 4% per annum between 2010 and 2015, most of the damage has been done. Nearly two-thirds of the forest cover from 1990 has been lost (Table 2).

**Table 2: Forest cover trends 1990 to 2015**

	1990	2000	2005	2010	2015
Forest on Private Land PVT (Ha)	3,331,090	2,553,778	2,188,331	1,065,306	697,986
Forest in Protected Areas (Ha)	1,549,394	1,464,688	1,385,260	1,227,532	1,131,793
All Forest Cover (Ha)	4,880,484	4,018,466	3,573,597	2,292,838	1,829,779
Forest cover as % of land cover	24	20	17	11	9

**Source: MWE 2016**

There is considerable discretion among private forest owners on how forested land is used, which has undermined any efforts to sustainably manage the country's largest forested land cover. The National Forestry Policy and Tree Planting Act (2003) enhanced the conservation status for central forest reserves; however the direct management of local forest reserves, and the indirect management of forests on private land was considerably undermined. The local governments suffer enormous pressure to provide land use options such as concessions for farming and commercial forestry in local forest reserves while their ability to support sustainable forest management on private land is very limited (CIU 2015).

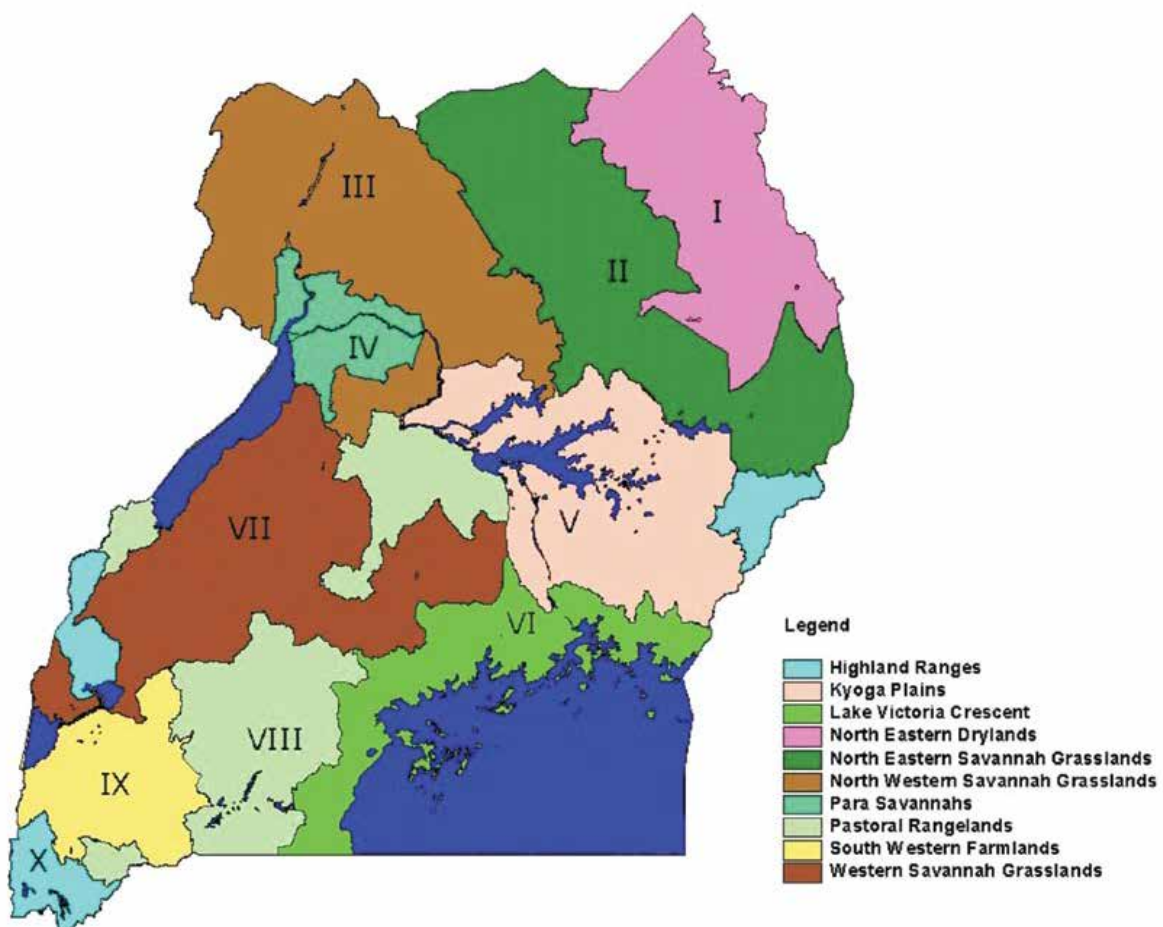
### 2.5.1.3 Agro-ecosystems status and trends

The areas under agriculture, agro-ecosystems, have generally increased even though a decline occurred between 2005 and 2010. Agricultural land area increased by 12.4% between 1990 and 2000 and by 4.7% between 2000 and 2005. A decline of 8.6% was observed between 2005 and 2010. More than 99% of agricultural production takes place on subsistence small holder farms and only 0.7% to 1.0% is on commercial farms (UBOS 2013). The traditional farming systems use very little external inputs, and often rely on manure from livestock under a mixed (crops and livestock) farming system, intercrops

and crop rotations to sustain production. Traditional subsistence farms with limited external input make up over 90% of the farms in Uganda (UNDP 2007). Even though monoculture production for sugar cane, tea estates, maize and oil palm, among others are increasing the use of external inputs such as fertilisers, pesticides and herbicides is limited. Whereas low input use reduced pollution; conversely low fertiliser use leads to soil mining and increased likelihood of encroachment of landscape degradation. Therefore, in the long-term as the government advocates for increased productivity through increased fertiliser use and improved seed (GoU 2015) a balance on judicious use of external inputs and existing organic and/or traditional farming systems is needed to maintain the desired levels of biodiversity in agro-ecosystems (UBOS/MAAIF 2008).

Uganda has 10 agro-ecological zones as shown in *Figure 6*. Table 3 describes the dominant ecosystems in the landscape, by which the agro-ecological zones are named, the climate conditions and crop suitability. Majority of farming is undertaken by smallholder subsistence farms, which until 2008 made up more than 99% of all farm households were under subsistence agriculture and less than 1% under commercial agriculture. The largest area available for agricultural production is in northern Uganda followed by western and eastern Uganda. Central Uganda has relatively less agricultural land and more settlements for urban, residential and industrial areas (MWE 2016).

**Figure 6: Uganda's Ecological Zones**



Source: UNDP 2007

Even though northern and eastern Uganda have more agricultural land the poorer soils, in some parts, mountainous landscape and poor infrastructure development means that agricultural productivity and value are quite low. The pressure from the growing population at a national rate of 3.2% per annum in the densely populated areas of the Mt. Elgon ecosystem and in the Lake Victoria crescent are encouraging deforestation for agricultural land and domestic energy needs. Meanwhile the low production in zones 1 and 2 (Table 5) makes the areas net importers of food from other parts of the country (Kraybill and Kidoido 2009). There are opportunities therefore for increasing aggregate agricultural productivity across the country while also ensuring sustainable biodiversity conservation.

**Table 3: Brief description of agro-ecological zones in Uganda**

Zone	Name of zone	District	Characteristics of zone	Enterprises
1	North-eastern drylands	Moroto, Kaabong, Kotido, Agago	Average rainfall-745 mm One rainy season, April-September, soils are moderate to poor, largely subsistence farming and pastoral activities	Gum Arabica, sim sim, beekeeping, goats/skin, beef cattle/ hides, ostriches, sunflower
2	North-eastern savannah grasslands	Pader, Kitgum, Otuke, Alebtong, Katakwi, Bulambuli, Kween, Bukwo, Nakapiripirit, Kotido	Average rainfall-1,197 mm One rainy season, April-October, soils are moderate to poor, largely subsistence farming with emerging commercial farms	Cassava, pulses, sim sim, beekeeping, goats/skin, beef cattle/ hides, sunflower
3	North-western savannah grasslands	Adjumani, Zombo, Arua, Moyo, Yumbe, Pader, Apac, Amuru	Average rainfall-1,340 mm, One rainy season, April-November, soils are good to moderate, out-grower schemes exist, possibility for block farming, cross border trade advantage	Spices, tobacco, beekeeping, cotton, pulses, sim sim, Robusta and Arabica coffee
4	Para Savannas	Nebbi, Nwoya, western Masindi	Average rainfall 1,259 mm, one rainy season March – November, soils are good to moderate, largely National Park land with potential for livestock farming, possibility of block farming	Spices, fisheries, cassava, beekeeping, beef/hides, goats/ skin, cotton
5	Kyoga plains	Kayunga, Kamuli, Iganga, Namaingo, Tororo, Mbale, Kaberamaido, Busia, Pallisa, Kumi, Soroti, Lira, Apac	Rainfall 1,215 mm, two rainy seasons, main season March – May, secondary season August – November, soils are poor to moderate, small-scale subsistence with some pastoralism, possibility for commercial agriculture	Fisheries, beekeeping, maize, pulses, beef cattle, cassava, goats, sheer butter tree



Zone	Name of zone	District	Characteristics of zone	Enterprises
6	Lake Victoria crescent	Kampala, Wakiso, Mpigi, Masaka, Rakai, Kalangala, Jinja, Mayuge, Bugiri, Busia	Rainfall 1,200 – 1,400 mm, two rainy seasons, main season March – May, secondary season October – December, soils are good to moderate, small, medium and large-scale intensive farming, availability of skilled labour, good infrastructure, numerous resources, high availability of immigrant labour	Robusta coffee, fisheries, spices, floriculture, horticulture, vanilla, cocoa, dairy cattle
7	Western savannah grasslands	Hoima, Kiboga, Luwero, Mubende, Kibaale, Kyenjojo, Kabarole, Kamwenge and Southern Kasese	Rainfall 1,270mm, two rainy seasons. Main season August–November, secondary season March – May, soils are moderate to good, out-grower system exists, moderately developed infrastructure	Robusta coffee, tea, maize, beekeeping, maize banana (brewing), beans, beef cattle/ hides
8	Pastoral rangeland	Buliisa, Nakasongola, northern Luwero, central Kiboga, southern Mubende, Gomba, Lwengo, wetern Rakai. Ssembabule, Kiruhura, southern Ntungamo, Isingiro	Rainfall 950mm – 1,021 mm, two rainy seasons. Main season March – May, secondary season January – February, soils are moderate to poor, communal grazing, absentee landlords, moderate to poorly developed infrastructure, agro-pastoral practices	Beef cattle, dairy cattle, goats, spices, beekeeping, citrus, pineapple
9	South-western farmlands	Mbarara, Buhweju, Sheema, Rubirizi, Buhweju Bushenyi, northern Ntungamo, Rukungiri, northern Kanungu	Rainfall 1,120 – 1,223 mm, two rainy seasons. Main season August – November, secondary season March – May, land shortage, soils moderate to good, relatively well endowed and organised farms, fairly well developed infrastructure	Robusta coffee, team, dairy/hides, banana (dessert), vanilla, tobacco
10	Highland ranges	Bududa, Manafwa, Sironko, Bulambuli, Kapchorwa, southern Kanungu, Kabale, Kisoro, northern Kasese and southern Bundibugyo	Rainfall 1,400 mm, two rainy seasons. Main season September – December (Kabale, Kisoro, Kasese), a long rainy season March – October first peak in April and second pea in August (Bududa, Manafwa, Bulambuli, Kween). Soils young volcanic soils rich in nutrients, mountainous, land shortage, fairly developed entrepreneurial skills	

Source: Kraybill and Kidoido (2009)



#### 2.5.1.4 Wetlands status and trends

In Uganda wetlands are defined as areas of land that are either seasonally or permanently flooded with animal and plants that have adapted to saturated soils. This definition was adopted in the National Environment Act Cap 153 which classifies a wetland as an area that contains water either permanently or seasonally and which are able to support living organisms to such flood-prone conditions (GOU 1995).

The status of wetlands as measured in 2008 cover approximately 10.9% (26,308 km<sup>2</sup>) of the land surface area, down from 15.6% (37,575 km<sup>2</sup>) in 1994 (WMD, 2008). The wetland cover is estimated to have declined to 8% of land cover by 2014 from a cover of 15.6% in 1994 (MWE 2014) – a loss of nearly 50% over 20 year period.

A poor attitude towards management and use of wetlands can be traced back to the British colonial Government. Both the British colonial government and its successor, the Government of Uganda, did not give a lot of priority to management of wetland resources. Wetlands, except those which fell within specific protected areas such as forest reserves, National Parks and Game reserves, did not receive the special protection of the state (NEMA 2011). As part of Uganda's environmental policy reforms, which culminated into development of policies and legislation on environment, wetlands and forestry resources, among others, a National Wetlands Policy was developed in 1995. At which time it was estimated that Uganda's wetland cover was about 13% of the land area cover (GoU). Despite the presence of the policy wetland degradation continued at a relatively high rate. For instance, the wetland catchment areas around Lake Victoria alone has shrunk by more than half its size in 20 years from 7,167.6 km<sup>2</sup> in 1994 to 3,310 km<sup>2</sup> in 2008. The wetland catchment of Lake Kyoga has also reduced in size from 15,008.3 km<sup>2</sup> in 1994 to 11,028.5 km<sup>2</sup> in 2008 (NEMA 2011).

Wetlands in Uganda provide a wide range of tangible and non-tangible benefits to various communities and the economy (Karanja et al. 2001; wetlands Management Department 2009). The tangible benefits include water for domestic use and watering livestock, support to dry season agriculture, provision of handicrafts, building materials, food resources such as fish, yams, vegetables and medicines. The non-tangible benefits include flood control, purification of water, maintenance of water table, micro climate moderation, storm protection (Kakuru et al. 2013). According to NEMA (2011) wetlands in Uganda provide 320,000 people with direct employment and provide subsistence employment for over 2.4 million.

Kakuru et al. (2013) estimated the annual contribution of wetlands on three agro-ecological zones of Uganda- the Kyoga plains, the Lake Victoria crescents and the South Western farmlands. The total economic contribution of wetlands in three agro-ecological zones of Uganda was estimated at \$10,948; 10,388 and 11,358/ha/year. The estimate value includes fish breeding and fish production, crop production, livestock grazing or pasture, livestock watering, value added through mulching, milk production and papyrus and domestic water supply.

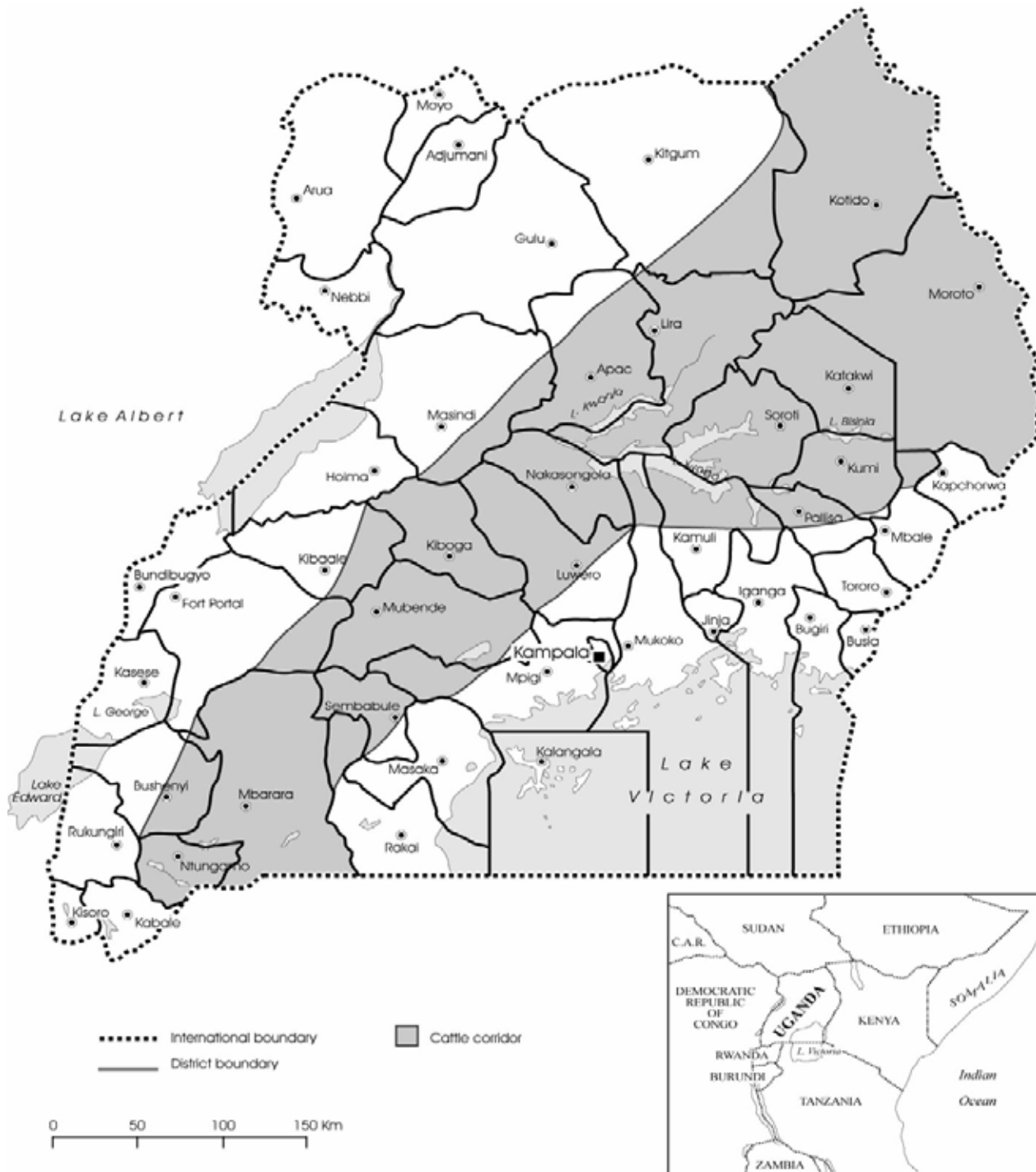
Uganda has 12 sites designated as wetlands of international importance (Ramsar sites) within a surface area of 454,303 ha. The Ramsar sites are also important bird areas and attract hundreds of birders from across the world and from within the country. Uganda's

Ramsar sites are spatially located along in the Lake Victoria Crescent, in Southwestern farmlands and rangelands, in the Albertine rift of the East African Rift valley along Uganda's border with the Democratic Republic of Congo (DRC), and the Lake Kyoga Basin (Byaruhanga, A and Opige, M. 2008; Ramsar 2016).

- **Lake Victoria crescent:** Sango Bay, Lutembe Bay, Mabamba Bay, Nabajjuzi and Lake Mbuuro wetlands
- **Southwestern farmlands and rangelands:** Lake Mbuuro Nakivali wetland system joining Rivers Katonga and Rwizi which drain into the north-western part of Lake Victoria.
- **Albertine Rift landscape:** Lake George and Murchison-Albert delta wetlands.
- Lake Kyoga basin: Lake Nakuwa, Lake Bisina and Lake Opeta, wetlands

#### 2.5.1.5 Rangelands resources status and trends

The traditional rangelands in Uganda occupy an estimated 84,000 Km<sup>2</sup> or 43% of the country's total land area, in a region referred to as the cattle corridor (Kisamba-Mugerwa et al. 2006). Rangelands largely composed on savannah grasslands, bush lands and wood lands (are already counted under forest land) (*Figure 4*). Rangelands are suitable for livestock production and the livestock production in rangelands contributes 15% to the agricultural economy and about 5% to overall national GDP.

**Figure 7: Uganda's Cattle Corridor region**

Source: MAAIF/GOU 2004

Rangelands in Uganda exhibit characteristics such as; low and erratic rainfall regimes leading to frequent and severe droughts, and fragile soils with weak structures which render them easily eroded. Pastoralism is the main economic activity and rangelands are traditionally mainly used as a common pool resource (Kisamba-Mugerwa 2001). The rangelands of Uganda used to be historically managed under traditional systems where grazers had open access with mobility as a main coping strategy to drought. Changes in land ownership, increased population and demand for food and fuel have led to changes in land use and cover types, affecting livestock management practices (Byenkya et al. 2014). Rangelands support majority of ruminant livestock and supply more than 85% of milk and 95% of beef consumed in Uganda.

**The major concerns for biodiversity conservation in the cattle corridor include:**

1. The increasing vulnerability to climate change. The National Adaptation Plans of Action (NAPA) report for Uganda (GoU 2007) highlighted the Cattle Corridor as one of the vulnerable areas to the impacts of climate change. The main factors contributing to vulnerability include the regular drought, overgrazing, deforestation, poor farming practices and soil erosion.
2. A lot of areas of the cattle corridor especially in Northern Uganda also have the lowest income and livelihoods prospects in the country (MFPED 2014). The poverty coupled with a rapidly increasing population exacerbates the marginal livelihoods conditions. As a result land degradation has intensified resulting in losses to the productive potential of the land, leading to more frequent famines, lower household incomes, and increased pastoral migration (Kisamba-Mugerwa 2006).
3. The cumulative impacts of degradation, population pressure and climate change vulnerability include disappearance of plant species, particularly medicinal plants and pasture. Despite efforts to introduce exotic pasture, crop and livestock species, farmers have tended to cling to their traditional crops and livestock species, because of their water and heat stress resistant qualities (GoU 2007).
4. Many areas of the cattle corridor are also the main suppliers of charcoal produced for urban markets across the country particularly Kampala City and the surrounding municipalities. The charcoal production not only represent an inefficient conversion of wood to fuel i.e. only one-sixth of the wood ends up as charcoal but also represents very low value.

A case study based on studies conducted by IUCN Uganda Country Office within the northern Uganda cattle corridor areas showed conversion of Shea butter tree to charcoal resulted into an income loss of UGX 600,000 due to the cumulative income earned from selling Shea butter nuts and/or processing the nuts for vegetable oil (*Table 4*). A simple gross margin analysis conducted to illustrate to farmers the economies of Shea butter nuts to charcoal produced from the tree showed as follows:

- a) Based on focus group discussions with communities in the CECF areas, a mature tree of shear can produce up to 8 sacks of charcoal. The price of a bag of charcoal within the markets ranges between UGX 10,000 and 15,000. Therefore, the revenue generated from cutting the tree and converting it to charcoal for a community

- member would be UGX 120,000.
- b) The same mature tree of shear can produce one 120 kg bag of shear, which would be sold in the local market at UGX 72,000. The Shear tree is capable of producing shear nuts at a steady rate for over 50 years (Nature Uganda 2011); but a cap of 50 years is created for discounting purposes.
  - c) The revenue from the Shea nuts discounted over the 50 year period was estimated to UGX 720,000. The discounted gross margin of changing from charcoal to maintaining the shear for nuts alone would be UGX 600,000.
  - d) In addition, the shear would also still be able to provide ecosystem services that are not reflected in the margin computation; such as firewood, shade, contribution to hydrological and ecosystem functioning.
  - e) A farmer has to choose between earning the equivalent of UGX 72,000 every year and all the ecosystem services mentioned for at least 50 years compared to earning UGX 120,000 from charcoal once.

**Table 4: Comparing market price based monetary flows for shear tree nuts versus charcoal**

Shea Tree Products	Quantity per Tree	Local price per unit (Shs/bag)	Accrued gross value based on market price (Shs)
Charcoal (70 kg bag)	8	15,000	120,000
Shea Nuts (120 kg bag/year)	1	72,000	720,000
Accrued gross margin value			600,000
Additional benefits and non-monetized values contributed by Shea butter:			
<ul style="list-style-type: none"> <li>• Wood fuel from dried tree branches</li> <li>• Ecosystem services such as shelter, climate moderation, soil erosion control</li> </ul>			

Whereas the example above articulates the monetary trade-off, it also shows the narrow articulation of ecosystem benefits. Both an improved articulation of ecosystem service benefits and increased value addition can enhance community perceptions towards increased conservation.

### 2.5.2 Species diversity

Uganda is significantly biodiversity rich, and the country ranks among the top 10 most biodiverse countries in the world. About 55% of the world's population (800) of Mountain Gorillas is found in Uganda. The country is home to 11% (1057 species) of the world's recorded species of birds, 7.8% (345 species) of the global mammal diversity, 19% (86 species) of Africa's amphibian species diversity and 14% (142 species) of Africa's reptile species richness, and 1,249 recorded species of butterflies and 600 species of fish. The country's flora population covers seven of Africa's 18 plant kingdoms, more than any African country (GoU/NEMA 2015).

There are 30 species of antelope, 24 species of primates including the charismatic Mountain Gorillas and Chimpanzees, and more than 5,406 species of plants so far

recorded of which 30 species of plants are known to be endemic to Uganda. Currently Uganda has several species listed in the IUCN Red List, 2013; which includes 183 plants, 25 mammals, 22 birds, 6 amphibians, 61 fishes, 9 molluscs and 12 other invertebrates.

## 1. Mammals

Trends of species diversity are described in Uganda's NDP2 (GoU/NEMA 2015). Nearly all mammalian populations experienced a decline between the 1960s and the 1980s, with the exception of Impalas. The populations of mammals continued to decline into the 1990s and only increased again in the 2000s and have generally remained stable with smaller declines in certain species' populations. Some important species of the Black Rhino and Oryx became extinct in the 1990s, while species such as Roan, Bight's gazelle and Topi are nearly extinct as their population have declined considerably.

Reports from the Uganda Wildlife Authority (GoU/MTWA, 2014) indicate increases for some wildlife species populations particularly Burchell's Zebra, Impalas and the Uganda Kob between 2007 and 2010. Conversely, there have been notable declines of some wildlife species populations, the Auditor General's (2011) report indicates declines for wildlife species population of Buffalos, elephants, hippopotamuses, lions and some zebras in Lake Mburo National Park, Queen Elizabeth National Park, Murchison Falls National Park and Kidepo Valley National Park. There is poaching in some parks and very limited research prevents a clear understanding of the reasons for stagnant and in some cases declining wildlife population.

## 2. Fishes and fisheries resources

Uganda has about 600 fish species in terms of biodiversity and all edible but the commonly encountered in trade are dominated by the Nile perch, Nile tilapia and small fishes (*Mukene*, *Ragoogi* and *Nkejje*). The main commercial species are Nile Perch (*Late nilotica*) from all the major lake except Edward/George. The small Nile Perch *Lates macroplathalnus* (from L. Albert); Nile Tilapia (*Oreochromic niloticin*) from all major water bodies; *Mukene* (*Rastreneobola argentea*) from the Victoria and Kyoga basin lakes; Muziri (*Neobola bredoi*) of L. Albert; cat fish (*Clarias garie pinus*); silver catfish (*Bagnus docmad*) from all major water, Lung fish (*Protoptenu aethiopias*) are also common in all water bodies (NEMA 2015).

Uganda water resources of lakes, rivers, streams and wetlands cover nearly 25% of the country's surface. The five large lakes (greater than 30 km<sup>2</sup>) are Victoria, Kyoga, Albert, Edward and George. However, the country also has 160 smaller lakes spread across the country (NaFIRRI 2012). Fisheries is an important sub-sector of food production, providing nutritional security to the food basket, contributing to the agricultural exports and engaging directly about 1.2 million people in different activities (FAO 2014).

Uganda's capture fisheries trends show an increase in fish production (Table 5). In 2014, 53% of the capture fisheries production was from Lake Victoria followed by lakes Albert, Kyoga and Edward, George and Kazinga channel which together produce over 95% of the country's capture fisheries. With the Albert Nile, Lake Wamala and the minor water producing 1.2%, 1.0% and 2.3%, respectively.



**Table 5: Capture Fisheries production by water system, in metric tonnes**

Fresh water systems	2010	2011	2012	2013	2014
Lake Victoria	162,929	175,817	185,000	193,000	245,000
Lake Albert	155,811	163,949	152,560	160,000	152,000
Lake Kyoga	51,707	61,586	44,049	40,000	38,000
Lakes Edward, George and Kazinga Channel	4,500	5,300	5,208	6,248	6,246
Albert Nile	5,200	5,000	5,043	5,500	5,390
Wamala	5,600	5,112	5,712	4,500	4,590
Minor waters	10,300	7,075	9,547	10,000	10,500
<b>Total</b>	<b>408,066</b>	<b>479,620</b>	<b>407,119</b>	<b>419,248</b>	<b>461,726</b>

Source: UBOS (2015)

Uganda is the 6<sup>th</sup> largest inland fisheries producer in the whole world coming behind China, India, Myanmar, Bangladesh and Cambodia. The number one producer in Africa and only followed by Tanzania (FAO 2014).

### 3. Medicinal plants

Whereas information on medicinal plants is scanty, there is strong evidence that 80% of Ugandans depend on indigenous medicines which are less costly and more accessible than allopathic medicines. Despite the importance of medicinal plants, about 1% of the 250,000 species of higher plants known to have medicinal value have had their biomedical potential determined. Therefore, a lot of plant species with medicinal value have been allowed to disappear together with associated knowledge and practice. The causes of disappearance include habitat loss to unsustainable harvesting and land use change.

### 4. Status and trends of pollinators

Pollinators have an important role in maintaining agricultural production. The most recognized pollinators are various species of bees, butterflies, moths, wasps and bats, birds especially the humming birds, honey eaters and sun birds (GoU/NEMA 2015). The presence of forest patches in fringe zones of agricultural matrices was found to diversify bee and butterfly communities delivering pollination services in nearby agricultural fields (Munyuli 2010). In Uganda's coffee- banana farming system for instance, bees contribute over 60% of the pollination of coffee (coffee robusta) faint set. During the year of study 2007, the mean economic value from Robusta coffee in the coffee-banana farming system was US\$ 214 million, 62% of which is attributed to the contribution of bees' pollinators (Munyuli 2010).

### 5. Status and trends of birds

Uganda has 1,057 bird species, 11% of the world's total. However, 15 of the bird species are endangered and another 11 are "vulnerable." Additional research is being conducted on status of other bird species. There are now 34 Important Bird Areas (IBA) in Uganda. Of these, 22 are within the national protected areas system i.e. a Forest Reserve, National

Park or Wildlife Reserve. Uganda has 12 Ramsar sites which as are also IBAs (WMD/NU 2008). The bird diversity in Uganda is a result of the location of Uganda on the confluence of major vegetation zones at the heart of the continent and good climate conditions. The threatened species include; the Shoebill, Grey Crowned Crane, Lesser Flamingo, Great Snipe and African Skimmer all of which are declining in Uganda (GOU/NEMA 2014).

The Bird Population Monitoring Scheme in Uganda implemented by Nature Uganda shows that some of the common and widespread species indicate some increases in most species, though with a few species decreasing (Nalwanga *et al.* 2012). Results of bird population monitoring indicated that the most common and wide spread birds in Uganda include, the Common Bulbul, Grey-backed Camaroptera, Red-eyed Dove, Speckled Mousebird, Bronze Mannikin, Scarlet-chested Sunbird and Marabou Stork. The most species rich site in protected areas was in Kidepo Valley National Park followed by Queen Elizabeth National Park and then Murchison Falls National Park. However, many of the best species rich sites were in privately owned small-scale mixed agricultural sites outside Protected Areas. This is an indication that much of the common and widespread birds are outside protected areas and in need of some form of protection. There is thus a need for promoting community conservation in the country.

## 3. FINDINGS FROM THE INSTITUTIONAL REVIEW

### 3.1 Institutional arrangements for biodiversity management

#### 3.1.1 Historic roadmap for policy and institutional development for biodiversity management

Formal management of forests in Uganda started in 1898 when the colonial government's Scientific and Forestry Department was established. A Department of Forestry was established as a separate body in 1917 and renamed as the Forest Department in 1927 (Turyahabwe and Banana 2008).

The first attempt to decentralize forest management was between 1939 and 1947 with legislation establishing village forests (VFs), LFRs and central forest reserves (CFRs). VFs were administered by local villages and all the revenues from them were used for local village development. On the other hand, LFRs were administered by either the District or Kingdoms in areas (e.g. Buganda, Tooro, Ankole and Bunyoro) where the latter existed while the CFRs were administered by the National Forest Department. By then, each Ugandan District had a District Local Government Council of Ugandan chiefs and councillors. The chiefs had powers over trees on both public and private lands and were mandated to issue licenses, collect revenues, regulate wood extraction and arrest offenders over the same while the Council had powers to make byelaws on use of forest resources (*Figure 5*).

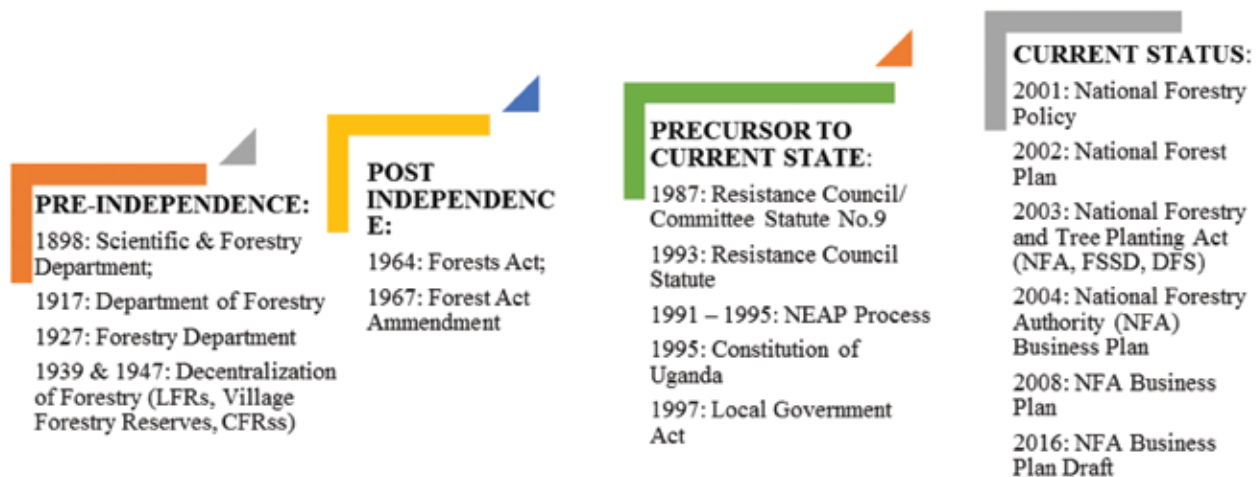
The 1967 amendment of the 1964 Forests Act sought to improve efficiency and ensure rationality in the sector by centralising provision of forest services hitherto provided by Local Administrators (Hamilton, 1984). Decisions on use of forest resources on public and private land were solely entrusted to a centrally organised Forest Department. Evolution of the current forestry management system started with Uganda's decentralization process which was initiated in 1987 with the Resistance Council/Committees (RCs) Statute No. 9 and enacting of the 1993 Resistance Council Statute. After promulgation of the Uganda's Constitution of 1995, the decentralisation policy was legalised by the Local Government Act (1997) cap 243, which established the District level Local Council (LCV), Municipality (LC IV) and Sub-county / Division / Town Council (LC III) as corporate bodies of local governments and devolved to them far-reaching powers and responsibilities such as income tax collection, service provision, formulation of policies and laws and managing the environment which were formerly undertaken by the central government ministries. Decentralization in Uganda is based on three inter-linked aspects: (i) political and legislative empowerment of the people, (ii) fiscal devolution and (iii) control of the administrative machinery by the local councils.

Local governments were expected to deliver services including management of forest resources on behalf of the central government. Under the 2001 Forest Policy and the National Forest Plan of 2002, the central government recognises local governments and other local community organisations as key players in forestry development. At the level of the District Local Government, the administrative (executive) functions are exercised through a hierarchy of officers supervised at the district level (by a Chief Administrative Officer), county level (by an Assistant Chief Administrative Officer), sub-county (by Senior Assistant Secretaries) and at parish (by Parish chiefs). The executive committee which is drawn from an Elected District Chairperson and elected District Councillors, initiates

and formulates policies, oversees the implementation of local and central government programmes, alongside the District council. The legislative functions are exercised through a hierarchy of elected representatives from local council 1 (LC1 or village level) to LC5 (District level). The legislative functions include formulation of policies, ordinances and byelaws for managing the districts' natural resources, including forests.

The National Forestry and Tree Planting Act 2003, under Part II classifies forest reserves into the following: (a) central forest reserves; (b) local forest reserves; (c) community forests; (d) private forests; and (e) forests forming part of a wildlife conservation area declared under the Uganda Wildlife Act, Cap 200. Country-wide, District Forest Departments manage small areas (about 5000 ha) of Local Forest Reserves (reserves that were decentralised to local governments) distributed in the different parts of the country. They are also mandated to offer advice on sound management of private forests and trees growing on private land, carrying out publicity and forestry extension services. All this work is categorised as district forestry services and the district forest department is mandated to implement them as indicated in the National Forestry and Tree Planting Act, 2003. In particular, Section 48 of the Act provides for the establishment by District Local Governments (DLGs) of the District Forestry Office (DFO) to function as a decentralised service under the guidance of the District Forestry Services (DFS).

**Figure 8: Institutional and Policy Evolution of the Forestry Sector**



### 3.1.4 Wildlife sector reforms

The British colonial government which governed Uganda undertook concerted efforts of setting aside major ecosystems and wildlife communities for conservation and sustainable use between the late 1880's and 1902. This was preceded by an era of self-regulation and control of use of all wildlife resources under guidance of culture and traditional way of life (Figure 6).

From 1902 -1923, sport hunting was introduced while use of traditional hunting methods and tools was banned. This created limitations and difficulties to continued use of wildlife resources by local communities. In 1923, the colonial government established a Game Elephant Control Unit that was later transformed into the Game Department in

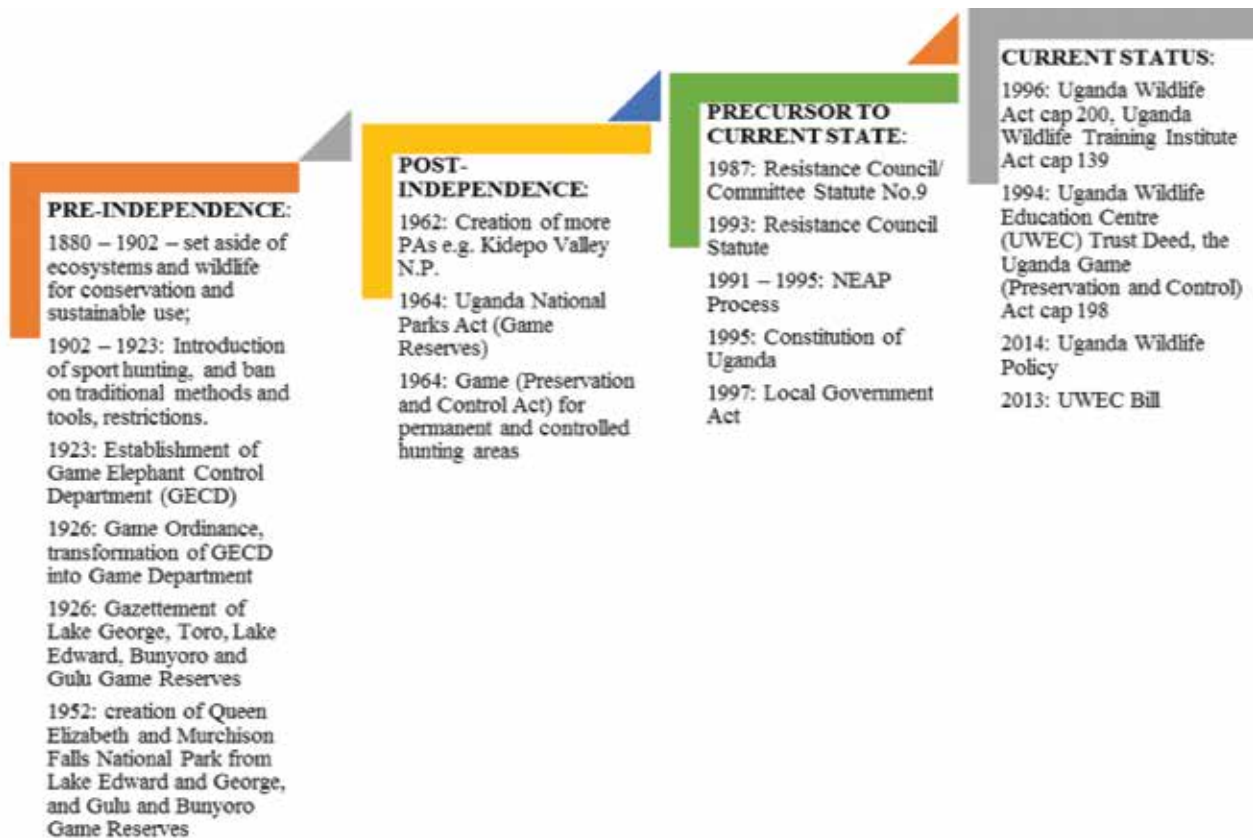
1925/26 under the Game Ordinance of 1926 to mitigate against potential depletion of large game species including elephants, rhinos, lions and hippos.

The colonial government passed Game (Preservation and Control) Ordinance of July 1926 and subsequently gazette Lake George, Tooro, Lake Edward, Bunyoro and Gulu the Game Reserves, as part of a process of identifying areas important for wildlife resources

In 1952, two National Parks, Queen Elizabeth National Park that combined Lake Edward and Lake George Game Reserves and Murchison Falls National Park combining of Gulu and Bunyoro Game Reserves were created under the National Parks Ordinance No. 3 of 1952. Under the National Parks Ordinance wildlife conservation area were created and a fully autonomous institution called the Uganda National Parks. The Game Department under the Game Preservation and Control Act was therefore left to manage all wildlife outside National Parks and overall policy development and supervision of the sector.

From 1959 to 1962, the national programme on wildlife conservation under the lead by the Game Department, embarked on consolidating gains including identification of additional important areas for (a) protection of wildlife and (b) human-wildlife conflict with special reference to problem elephants. As a result, more conservation areas were created including Controlled Hunting Areas (seasonal) and Wildlife Sanctuaries; leading to the National wildlife conservation Programme that was adopted by the newly independent Uganda of 1962 under the Game (Preservation and Control) Act of 1962. The subsequent process involved the creation of more protected areas including National Parks (Kidepo, 1963), Game Reserves and in particular the establishment of permanent Controlled Hunting Areas under Uganda National Parks Act of 1964 and Game (Preservation and Control) Act of 1964 respectively.

The Uganda Wildlife Statute No. 14 of 1996 (Uganda Wildlife Act, Cap 200 of 2000) and Uganda Wildlife Training Institute Statute of 1996 (Uganda Wildlife Training Institute Act, Cap 139 of 2000), Uganda Wildlife Education Centre Trust Deed of 1994, and the Uganda Game (Preservation and Control) Act Cap 198, provided for rationalization of the wildlife sector to the current set up. Wildlife conservation is governed under overall policy guidance of the national Constitution supported by various framework policies and laws including the National Environment Policy (1994) and National Environment Act, Cap 153 of 2000, among others.

**Figure 9: Institutional and Policy Evolution of the Wildlife Sector**

### 3.1.5 Environment Sector Reforms

The origins of the NEAP can be traced back to the early 1980s when a mission from the International Union for the Conservation of Nature (IUCN) visited Uganda and proposed design of a National Conservation Strategy (NCS). With funding from the United Nations Environment Programme (UNEP), IUCN designed the first draft of the NCS in 1983, and provided a resident advisor to facilitate the preparation of the process. Civil unrest resulted into the premature departure of the IUCN advisor although the NCS document was fairly complete (*Figure 7*).

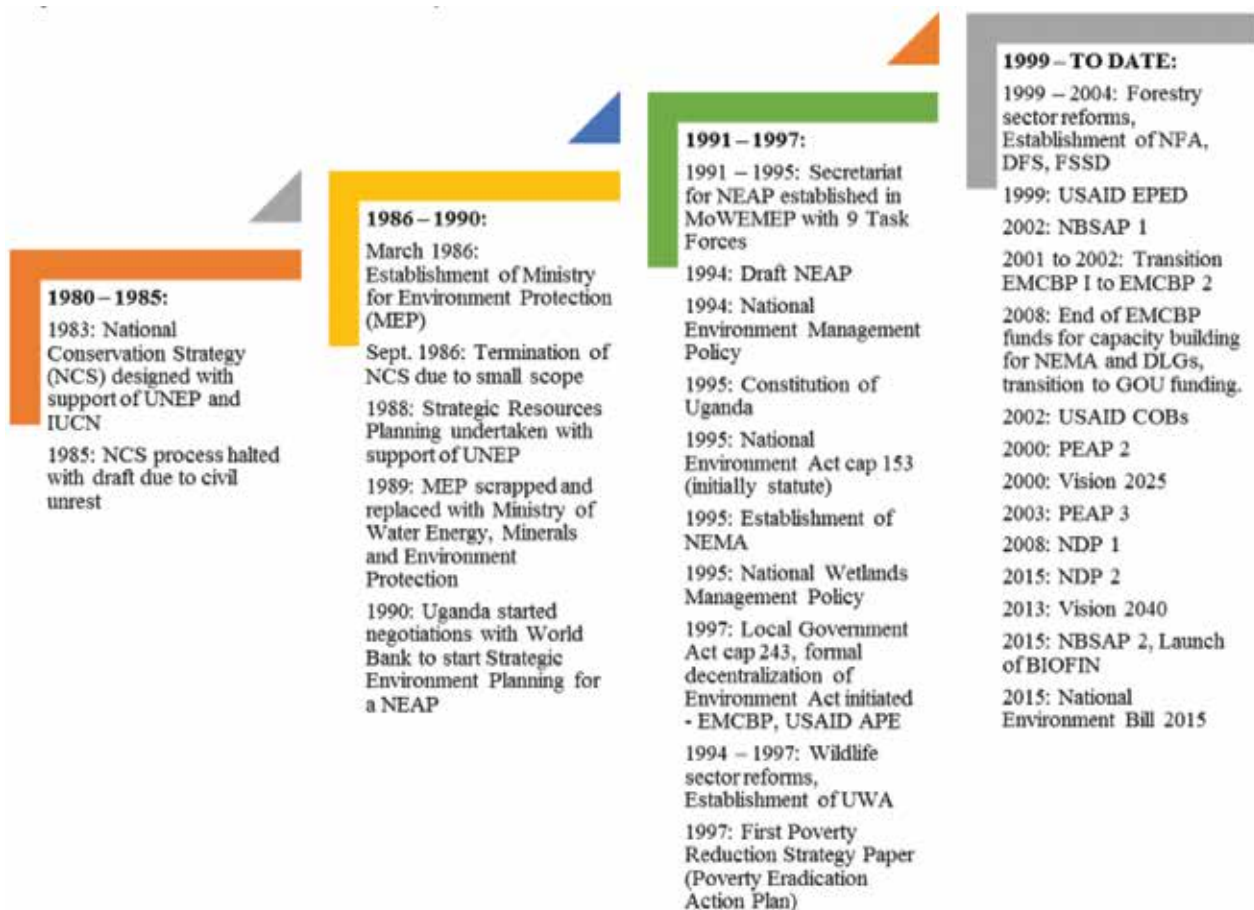
In 1986, the National Resistance Movement (NRM) Government came to power, and began to take steps to restore basic stability in the country. Among the priorities for the new government was the environment. In its first year in power, the Government established a Ministry of Environment Protection (MEP). The Government made contact with the international community seeking support for the new ministry, among these requests was support for wetland management training, USAID provided support on biodiversity protection while the European Commission and NORAD financed forest rehabilitation. Government's interest in the NCS declined as government felt the NCS had a very narrow scope and it did not adequately address conservation and development linkages, and lacked a pragmatic action plan which could be implemented. The NCS was terminated in September 1986 and instead the Government decided to support a process where a strategy capable of addressing policy reforms, supporting institutional arrangements with pragmatic top and bottom level of government issues encompassing the board-based popular participation of the NRM system of government



Between 1987 and 1988, UNEP supported an extensive analytical exercise, termed Strategic Resources Planning, which inventoried and analyzed ENR problems, issues and potential solutions. This resulted into a ten volume report (UNEP 1988). At the same time UNEP consultants were conducting studies, the institutional arrangements created by government were in turmoil. The bureaucratic problems of establishing line ministries to deal with cross sectoral environmental issues became more and more acute, horizontal coordination, a central function of environmental management, was particularly difficult. Further MEP operations were disrupted by frequent replacements of its senior officials.

In 1989, the MEP was scrapped and became part of the Ministry of Water, Energy, Minerals and Environment Protection. Outside Uganda, during this same period, the World Bank had started carrying out environmental planning missions in Sub-Saharan African counties whose main purpose was to introduce and initiate strategic environmental planning frameworks known as National Environmental Action Plans (NEAPs). Uganda joined negotiations with the World Bank and in 1990, the Government of Uganda started steps to implement its own NEAP process.

**Figure 10: Institutional and Policy Evolution Environment Sector**



### 3.1.6 The NEAP process and implementation

The core of Uganda's current environmental and biodiversity management system is built on the environmental policy reforms of the early 1990s. The subsequent reviews and reforms led to design and enactment of the current set of policies and legislation on environmental management, wetland management, wildlife management, forestry

management, and more recently climate change. The critical intervention of the environmental policy reforms was National Environment Action Plan (NEAP) that was developed between 1991 and 1995, along with the NEAP, a National Environment Management Policy (NEMP 1994), and National Environment Statute 1995 (National Environment Act cap 153) were developed and the latter enacted by the Parliament of Uganda.

NEAP had envisaged a strategy to bring together the sectoral institutions responsible for biodiversity conservation (particularly Forestry, Game, National Parks and Fisheries) under a common management authority. However, the Action Plan was used as source of policy prescription that was translated into the National Environment Act cap 153, and subsequently the Uganda Wildlife Act cap 200, and the National Forestry and Tree Planting Act. The NEAP focal areas extended to environmental management, wildlife management, forestry management, and water sector management actions. Other sectors covered by NEAP where supporting legislation was developed are fisheries, wetlands and land. With regard to land issues the NEAP addressed the need to provide an opportunity to modify incentives so as to facilitate sustainable environmental practices. This would have included environmental covenants on land leases, changes in land classifications and taxation rates.

The National Environment Act cap 153 established the National Environment Management Authority (NEMA), which is linked to the Policy Committee on Environment (PCE) headed by the Prime Minister through the Board of Directors and the Minister responsible for the Environment. National level planning for environmental and/or biodiversity management was linked to the sub-national level planning through the 1993 the Government's decentralisation policy, which was subsequently reformulated alongside the Local Government Act cap 243.

Under the National Environment Act cap 153, the sub-national institutional structure for environmental/biodiversity management comprised of District Environment Committees (DECs) charged with coordination of Environment and Natural Resources (ENR) plans and activities, integration of ENR concerns into development plans and projects, formulation of ENR ordinances and bylaws and environmental monitoring and information dissemination. District Local Governments appoint District Environment Officers to support the function of the DECs. Similarly, at the sub-county level, Local Environment Committees (LECs) were established by the National Environment Act (cap 153). The LECs are mandated with functions related to planning, environmental education, community mobilization and ENR monitoring (Ref).

A rolling process of environmental planning and action was sketched out in the Environment Act (cap 153) where by the NEAP was to be reviewed and updated every five years, DECs and LECs were to prepare and/or revise District Environment Action Plans (DEAPs), every three years. In essence the NEA established a strong basis for a decentralized which in principle harmonized ENR actions at across levels, national, District and local levels.

The National Environment Act also ensured horizontal linkage for NEMA with Ministries, Departments and Agencies (MDAs) through Environmental Liaison Units (ELUs).

Beyond public sector, liaison with non-government organisations (NGOs), private firms and international agencies was also provided for. NEMA's principal functions were: policy formulation and strategy development, cross-sectoral policy and programme coordination, public education and awareness building, regulatory standards development and environment, and ENR monitoring and reporting.

From a very early stage, it was realized that developing supporting rules, detailed regulations and applicable standards to put the NEAP policies in practice and provide a legal basis for uniform and credible enforcement was running at a slow pace. At District level, elaboration of environmental laws required the development of ordinances and bylaws. When the NEAP was completed Uganda had 44 Districts, with 75% of the Districts revenues obtained from central government and 25% generated locally.

Currently, the country has 116 Districts up from 44 Districts in the mid-1990s. Moreover, only about 5% of the revenues are generated locally, about 95% is obtained from central government transfers.

In the early stages of implementing the NEAP, it was realized that large financial commitments were needed. At the time, considerable support was obtained from received from the United States Agency for International Development (USAID)'s Action Program for Environment (APE) towards ENR management capacity building, institutional development for Uganda national parks and other related biodiversity such as buffer zones and implementation of Integrated Conservation and Development Projects (ICDPs). The funding was transmitted through USAID APE's Grants Management Unit (GMU). Subsequently additional support was obtained from the Danish Agency for International Development, and the United Kingdom's Department for International Development (DFID) for the Forestry Sector Reforms, among others. The other major funder was the World Bank through the Environmental Capacity Building Project (EMCBP). Funds from EMCBP support the establishment of NEMA and its institutional development, as well as piloting of NEAP in six Districts, which number was increased an additional target of 22 Districts; however, the actual Districts impact were 27 (World Bank 2012).

Altogether 33 Districts developed DEAPs and piloted its implementation. However, with the Districts being subdivided the mother Districts retained the mandate over the DEAP while the new Districts have not been able to carry on the progress made. Therefore, for the most part the process stalled at the sub-national. Even though small efforts from UN Poverty Environment Initiative (UNPEI) support District Environment Policy development in at least three Districts (Butaleja, Nakasongola, Masindi) . Other efforts of non-governmental organisations (IUCN, WWF, among others) and donor support to NEMA has been used to support at least 20 Districts in northern (Acholi and Lango sub-region Districts), eastern (Amuria, Kapchorwa Kween) and western (Kasese) Uganda develop Environmental and Natural Resources Management Ordinances and bylaws covering use of forestry products and soil and water conservation actions.

**Table 6: Districts covered by World Bank EMCBP, USAID EPED and COBs**

Eastern	Northern	Western	Central
<b>World Bank EMCBP</b>			
1. Kamuli	1. Arua	1. Hoima	1. Masaka
2. Jinja	2. Nebbi	2. Kyenjojo	2. Wakiso
3. Iganga	3. Adjumani	3. Kibale	3. Mukono
4. Pallisa	4. Gulu	4. Kasese	4. Kalangala
5. Kumi	5. Lira	5. Kabale	5. Kampala
6. Tororo	6. Kotido	6. Ntungamo	
7. Busia		7. Mbarara	
8. Mbale			
9. Sironko			
<b>USAID Environmental Protection and Economic Development (EPED) implemented by ACDI/VOCA</b>			
		1. Masindi	
<b>USAID –Conserve Biodiversity for Sustainable Development (COBS) Support Project implemented by ARD Inc.</b>			
		2. Bushenyi,	
		3. Rukungiri,	
		4. Kanungu	
		5. Kisoro	

The phase out of USAID funds from NEAP activities occurred in early 2000s while the funds from the World Bank continued until 2008. World Bank funds for EMCBP were extended from 2008 to 2012 with a specific focus on the Municipal Solid Waste Management project. The initial support provided by the World Bank EMCBP project was from 1996–2001. EMCBP 1 closed on June 30, 2001 and was rated satisfactory. The EMCBP2 represented the second phase of the Bank's long-term support to the GOU for its implementation of the NEAP, the NEA, and the LGA. It was designed to consolidate earlier achievements of the EMCBP, with a focus on ensuring sustainability of NEMA,

### 3.1.7 Lessons learned from the donor-supported piloting NEAP institutional capacity building

- (i) **Institutional development projects require focus on efficacy and delivery.** The design of a sustainable and result-driven capacity and institution building intervention needs: (i) a clearly defined objective specified by measurable and realistic results (outcomes) related to the efficacy of the institution and proposed timeframe and budget input, (ii) an in-depth analysis of the sector and actors involved with a particular emphasis on assessing and seeking complementary support from government and other partners; and most importantly a well-researched approach for (iii) operationalization of capacity gains (how to use (and fund) improved capacity).
- (ii) **Spreading resources widely impacts implementation performance.** Environmental projects need to be more strategic and less ambitious, using institutional champions as change agents and recipients. This will increase the likelihood of sustainability and measurable impacts (e.g., focus on NEMA / key elements of its core mandate, specific lead agency or district, environmental priority).

- (iii) Institutional strengthening requires a well-defined engagement strategy.** A well-defined and implemented engagement strategy based on a detailed stakeholder analysis during preparation should lead to focused partnerships and supports ownership required to achieve defined institutional objectives. The project design was complex involving a variety and number of stakeholders. The project would have achieved better results by further prioritizing stakeholders followed by specific consultations (e.g., LA, districts) and the development of a NEMA promotional strategy.
- (iv) Manage the political interference.** World Bank Evaluation of implementation of Environmental Management in Uganda documented political interferences occurred particularly in the wetlands, e.g., 2008 Vice-President and RDC of Kabale district directed the people of Kabale district sub-counties to continue reclaiming and growing potatoes in wetlands; in 2008 LCV chairman of Kumi district banned implementation of the Wetlands Ordinance resulting to severe encroachment of wetlands; in 2009 LCV chairman of Wakiso district sabotaged restoration process in Nabweru Sub-country; in 2008 NEMA started with restoration of Kinawataka wetland delayed by LC leaders who mobilized the inhabitants of the wetlands against the restoration team. Although the wetland was restored, local leaders mobilized communities and the wetland was re-encroached. In the forestry sector similar political interferences occurred, for example in Mabira, Bugala (oil palm planting that led to resignation of NFA Board and Senior Management in 2006), ban on evictions, ban on issuance of new licenses, etc.
- (v) Synergy-driven implementation modalities enhance sector performance.** Institutional development projects should aim at achieving measurable coalition/partnership arrangements with key players that will increase the external performance and leverage potential support.
- (vi) Reliable sector data enhances assessment of impact for effective decision-making.** An operation supporting an institution in charge of a sector needs to ensure that at least basic and strategic data are collected, updated, reported, and disseminated in a readable and digestible way. As a result, the impact of the EMCBP2 on ENR has been difficult to assess. Moreover, the absence of such data and system contributed to lack of targeted interventions under the micro-projects and ecosystem restoration support.
- (vii) Strengthening effectiveness of project supported results.** A specific assessment of how to enhance the efficacy of key project supported results should be carried out on a regular basis during implementation (e.g. at MTR) and related indicators built into the project results framework. The project management tools did not provide for assessing the effectiveness of quantitative results. A qualitative assessment integrated in the project work plan could have provided recommendations on how to improve the delivery on the EIA system (e.g., support for an independent monitoring mechanism, public reporting, improving quality of EIA, and improving timely delivery of EIAs).

## 3.2 Status of Institutional arrangements for biodiversity management

### 3.2.1 Environmental/ Biodiversity Management

The *Figure 8* outlines the current institutional arrangements for the NEA. At the centre of the institutional framework are the institutional interactions, partnerships between NEMA and other MDAs and the District Local Governments.



Generally, the relationship between NEMA and the MDAs and District Local Governments is weaker than that envisaged under the NEAP. The specific causes are:

- (i) In the aftermath of the NEAP process the prescriptive input of NEAP led to sector policy reforms for forestry and wildlife management as well as wetland management. The core role of NEMA was to ensure that the NEAP strategic expectations were maintained. However, the design of subsequent instruments was less coordinated. Subsequently while the different constituent sub-sectors of NEAP continue to undertake reviews and reforms, these are seldom linked to the spirit of the NEAP. The NEAP itself has not been reviewed since its design.
- (ii) The Capacity building efforts under NEAP were piloted in 33 Districts however, the country continued creating more districts which continued to reduce the impact of the institutional capacity building efforts as new structures were being multiplied, with resources being spread too thinly to have a larger impact.
- (iii) At the national level there were several institutional reforms which included creation of new ministries and agencies and continued loss of institutional memory and capacity to integrate NEAP into activities.
- (iv) The sustainable development focus shifted to increased productivity, wealth creation, based on urbanization, industrialization, infrastructure and mineral and energy development. The contribution of ENR to this process has not been clarified, while the contribution of other competing sectors is often very clear.

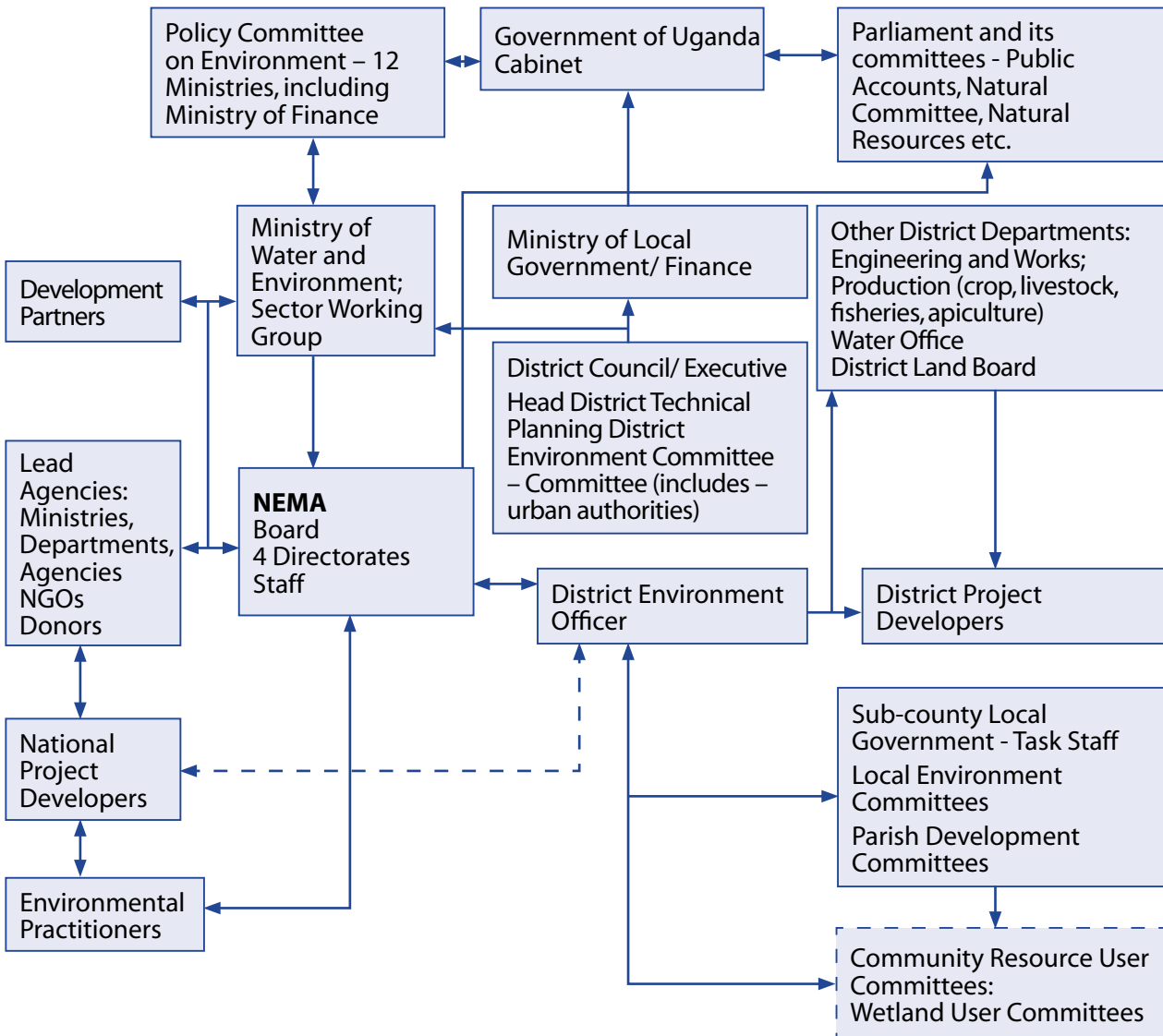
The NEAP process is currently limited to environmental compliance actions and implementation biodiversity management coordination roles where NEMA is strongly linked with NBSAP core sectors of agriculture, forestry, and tourism and wildlife.

The relationship with strategic environment frameworks of infrastructure, energy and mineral development, water resource management use, and local governments are absent. The sector has not undertaken reforms on the instruments for environmental management despite the high enforcement and compliance costs and failures that have led to drastic losses of wetland and forest resources and pollution in surface and ground water systems.

Absence of clear data collection, monitoring and evaluation frameworks and inventories on the contribution of private sector, non-governmental organizations and communities in biodiversity management.



**Figure 11: Institutional arrangements for biodiversity management National Environment Act**



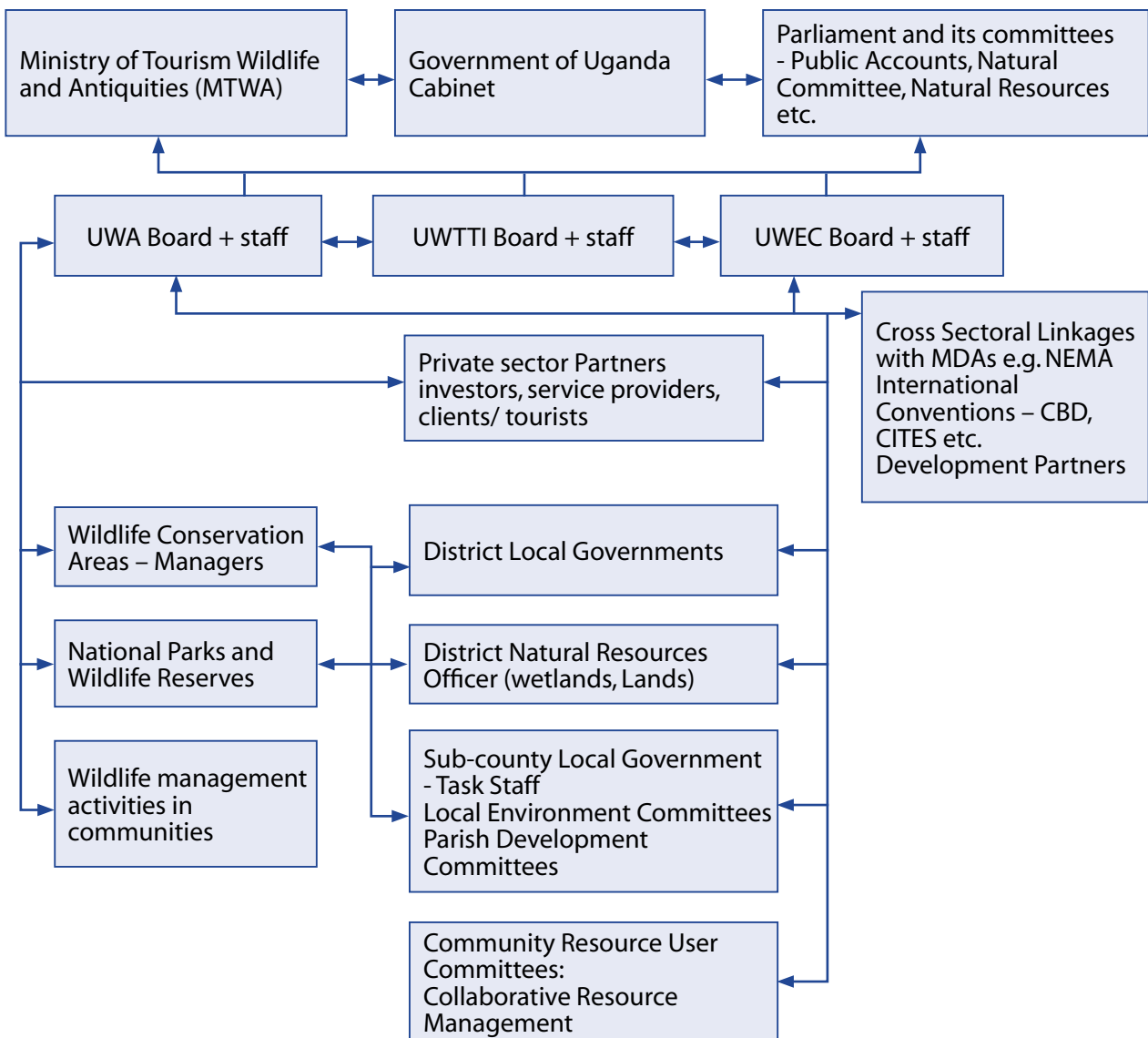
### 3.2.2 Wildlife Management

The institutional arrangements for wildlife management combine prescriptions of the NEAP and the historic evolution of wildlife management in the country. The current framework has stabilized on a tourism sector where core agencies of UWA, UWEC and UWTTI perform the tasks of national park and wildlife reserve management, wildlife education and zoo, and wildlife training respectively (Figure 9). The sector is at the centre of tourism development in the country as wildlife tourism is the leading product from the sector. The tourism packages developed target a market skimming for part of Uganda and international community that have effective demand for tourism. Community engagement is through collaborative resource use arrangements, and access and benefit sharing at the sub-national level working with communities through their sub-counties and Districts.

UWA, UWEC and UWTTI are active stakeholders in biodiversity management and coordination activities at the national level. UWA is responsible for wildlife both

in protected areas and that in non-protected areas. However, there are no specific structures linking the sector with District Local Governments, the engagement is through the window created in the NEA where District Natural Resources Departments coordinate interactions with central government agencies. Interaction with NEMA is generally through support on environmental compliance. Increasing pressure for land use change associated with oil and gas and mineral developments in National Parks and Wildlife Reserves have increased the frequency of interactions. The actions of private developers who have to comply with EIAs has also been a strong window for interaction.

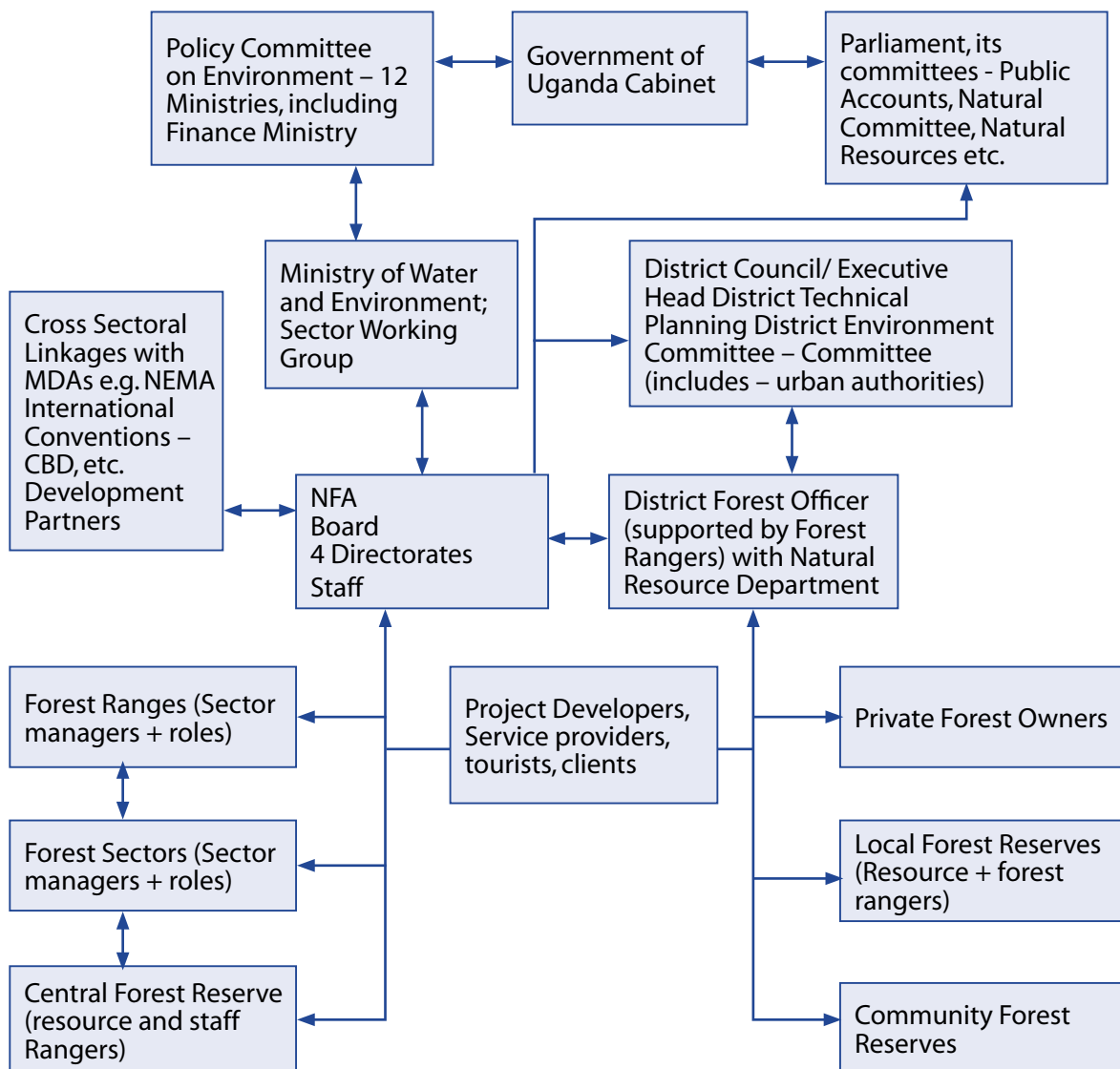
**Figure 12: Institutional arrangements for biodiversity management Wildlife Act cap 200, UWEC Trust Deed, Wildlife Training Institute Act cap 139**



### 3.2.3 Forestry Management

The current forestry management structure is also a merger between the evolution of the ENR sub-sector and the historical forestry management systems. The two tier system of forestry management was restored with the government declaration in 1998 and affirmed by the National Forestry and Tree Planting Act 2003. The two tiers operation separately in their management of forestry resources. The NFA focuses on central forestry reserves while the District Forest Service focuses on local forest reserves and other local forest activities (Figure 10).

**Figure 13: Institutional arrangements for biodiversity management, National Forestry and Tree Planting Act 2003**



Given the level of autonomy given to decentralized local governments, the strategic direction on forestry management at the sub-national level is often based on capacity and influence of District Councils. The District Forestry Office has a District Forestry Officer and often one ranger. Where Districts have several private forest owners the Forestry and Tree Planting Act 2003 and the Local Government Act cap 243 do not give adequate guidance to the District Forestry Office on the actions that occur on private forest land. Therefore, the highest deforestation rates in excess of 5% per year occur on private lands.

The institutional arrangements backed by the Forestry and Tree Planting Act, 2003, provide for both forestry production and forest resource conservation including drawn revenue trees from ecotourism activities. The strategic planning components for the sector are not strongly integrated to an overall national strategy on forestry and other components of biodiversity management. The forestry sector reforms seem to have created considerable independence of roles and responsibilities for forestry management that cannot be adequately backed by environmental compliance standards. The standards developed by the forestry sector do not have strong compliance and enforcement measures especially when they are developed at the national level which is detached from District Local Governments and people with forests on private land. Similarly, the efforts of Districts are disparate actions that are not standardized across the 116 Districts in the country.

### 3.3 Key biodiversity conservation and finance actors

#### 3.3.1 National Biodiversity Focal Points

The Uganda NBSAPII report cites the institutions responsible for biodiversity conservation and management including: the Ministry of Water and Environment (MWE); the Ministry of Tourism, Wildlife and Antiquities (MTWA); the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF); the National Environment Management Authority (NEMA); the Uganda Wildlife Authority (UWA); the National Forestry Authority (NFA); and the Uganda National Council of Science and Technology (UNCST).

Uganda actively participates in international biodiversity conservation efforts through the CBD secretariat and related biodiversity conservation efforts. The national focal points for Uganda's participation in international biodiversity conservation efforts include:

Focal Point and Institution	Focal Point for:
1. Francis Meri Sabino Ogwal National Environment Management Authority (NEMA)	Convention for Biological Diversity (CBD) Subsidiary Body on Scientific Technical and Technological Advice (SBSTTA) Nagoya Protocol on Access & Benefit Sharing (ABS) Clearing House Mechanism (CHM)
2. Mr. Daniel J. Babikwa	CEPA Informal Advisory Committee
3. Pauline Akidi Ministry of Finance, Planning and Economic Development (MFPED)	Resource Mobilisation

4.	Dr. Mary Namaganda College of Natural Sciences, Department of Biological Sciences, Makerere University	Global Taxonomy Initiative
5.	Aggrey Rwetsiba Uganda Wildlife Authority	Protected Areas
6.	Dr. D.L.N. Hafashimana National Forestry Resources Research Institute (NaFORRI), National Agricultural Research Organisation	Cartagena Protocol on Biosafety to the Convention on Biological Diversity Biosafety Clearing House (BCH)

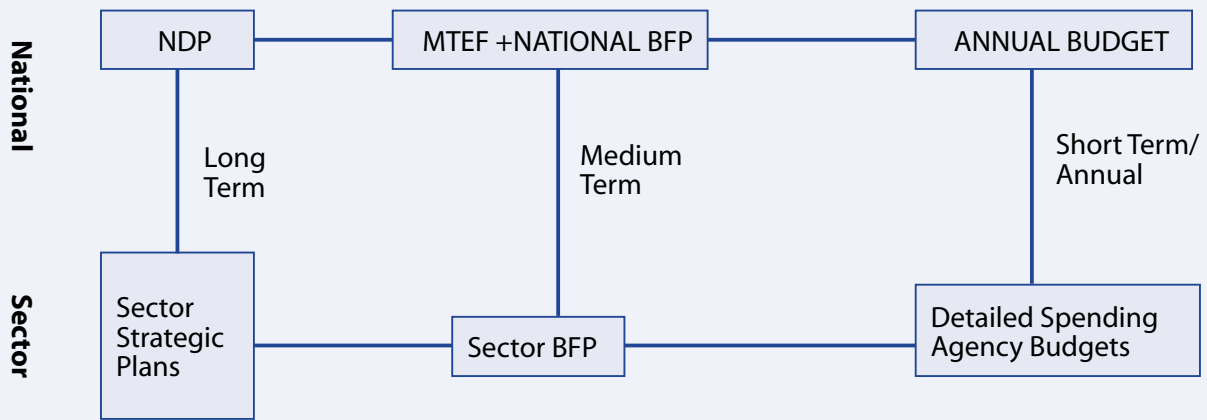
### 3.3.2 Key public sector biodiversity finance actors by process

Whereas the key actors are as articulated in the section above, the structure for biodiversity finance are more aligned by institutional structure for public sector, private sector and non-governmental actors and international finance.

#### 3.3.2.1 Central Government budget planning cycle

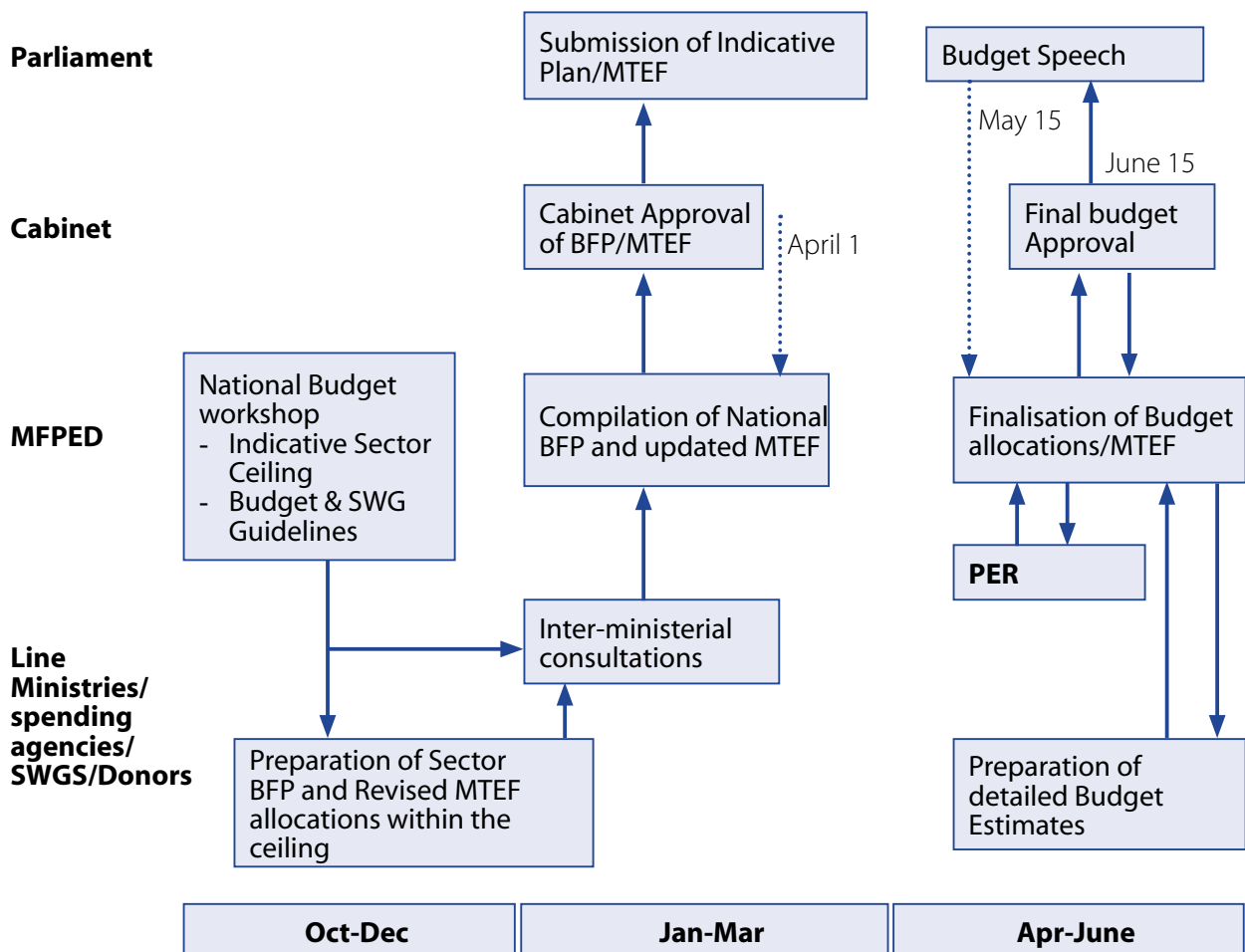
Central government financing for biodiversity conservation, like all other national government financing is articulated in the national budget structure, linking the National Development Plan, Sector Strategic or Investment Plans (SIP) and Sector Budget Framework Papers (BFPs) and Annual Budgets (*Figure 11*). The institutionalised annual budget cycle shows the central budget process in *Figure 12* and the local government budget process in *Figure 13*. The process in *Figure 12* shows the preparation and estimation processes that take place in Ministries, Departments, and Agencies (MDAs) before the budget process is collated at the sector level. The oversight for the sector occurs within the Sector Working Group. The discussions at the Sector Working Group are based on sector priorities, allocation and review of the government budget ceilings. The budget ceilings indicate government's distribution of resources across different sectors based on priorities in the NDP, and annual budget strategy.

**Figure 14: Framework for linking policies and strategies to budgeting in Uganda**



Source: NEMA (2015)

**Figure 15: Summarised annual national budgeting cycle**



Source: Williamson 2011

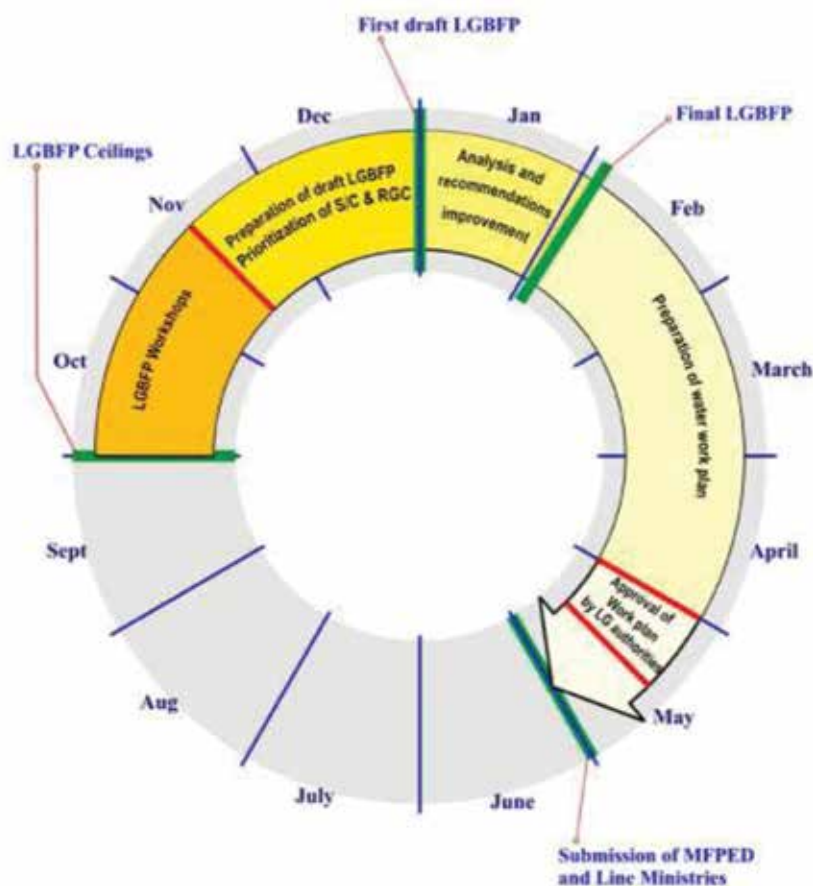


Beyond the sector working groups are inter-ministerial consultations and this leads to compilation of the National BFPs and updating the Medium Term Expenditure Framework (MTEF). The National BFPs are put before the cabinet, discussed and then approved for budget reading. The annual budget is then placed before the floor for parliament. The final budget that is approved by parliament is then implemented through the Public Finance Act (2015) through the leadership of the MFPED.

### 3.3.2.2 The Local Government Planning Cycle

The planning cycle for local government starts in the second quarter of the year in October/November when MFPED issues the budget call circular. The planning cycle for the District and Sub-county Local Governments is divided into four phases that are further subdivided into steps as set out in Figure 13.

Figure 16: District Planning Cycle



Source: MWE (2013)

Phase one, the situation analysis, occurs between July and September and involves preparation for the planning cycle, feedback to the lower local government (sub-county) and situation analysis. Phase two is the strategic planning phase and it occurs between September and October. The second phase involves review of District Local Government performance and strategic planning. In phase three on formulation of the BFP between

October and January, preparation of the BFP starts with reference to the local government budget call ceilings and the final BFP is compiled. Phase four (consolidating the plan) occurs between January and June and it includes producing a draft District Development Plan (DDP) or Municipal Development Plans (MDP) and preparation of summary budgets and approval by the lower local government and District Local Government Council and submission of the approved plans to MFPED. (MWE 2013).

### 3.3.3 Key private sector biodiversity finance actors

The key roles specified for private sector in Uganda's NBSAP are: (i) investing in sustainable and environmentally-sound technologies; (ii) investing in alternative income-generating activities; (iii) contributing to resources to support programmes on land management and biodiversity conservation; and (iv) providing support to the new financing mechanisms proposed in NBSAPII. The current set of private sector actors can also be categorised in a similar manner (NEMA 2015).

Whereas no explicit programme for private sector support towards biodiversity conservation exists, there are many initiatives for biodiversity conservation where the private sector has played a leading role. Private sector has been engaged in generation of energy from biomass waste, leading to savings of biomass harvested for industrial heating, companies are actively supporting catchment management actions and greenhouse gas mitigation projects in several parts of the country (Table 7). A lot of these actions are small and can be scaled up further through formalised arrangements protected by legislation.

**Table 7: Examples of institutional contributions of private sector to biodiversity management**

Key roles	Some of the listed private sector institutions and companies	What the companies/ associations do for biodiversity management by sector
Investing in sustainable and environmentally-sound technologies	Beverage companies (Coca Cola, Nile Breweries Ltd., Uganda Breweries Ltd.,,	Introduced wastewater treatment technologies to minimise the chemical concentration of the effluent discharge from factory operations.
	Oil development companies: Total E&P, Tullow Oil	The oil companies have introduced modern environment practice of environmental management for oil and shown strong commitment to comply with environmental regulations.
	Sugar Companies: Kakira Sugar Works, Kinyara Sugar Works, Sugar Corporation of Uganda Limited;	Sugar production companies have invested in electricity co-generation from baggase. This allows them to use the electricity generated for processing and supply the national grid
Investing in alternative income-generating activities	Coca Cola, Stanbic Bank, Standard Chartered Bank, Barclays Bank	The companies invest in revolving fund-type models that combine biodiversity conservation with livelihoods management e.g. Rwizi River catchment management actions supported by Coca Cola.

Contributing to resources to support programmes on land management and biodiversity conservation	Uganda Manufacturer's Association (UMA), Private Sector Foundation of Uganda (PSFU),	Associations are championing for a green economy to increase employment through simpler non-destructive technologies.
	EIA practitioners and private consultants	They use their skills and craft to support development of sustainable alternatives to development that minimise biodiversity damage.
	Agricultural producers and exports of organic and sustainable produce including actors under the National Organic Agriculture Movement of Uganda (NOGAMU)	Uganda is the leading organic agriculture producing and exporting country in Africa. The development and maintenance of organic and sustainable value chains requires considerable commitment with limited public sector support.
Providing support to the new financing mechanisms	Coca Cola, Stanbic Bank, Standard Chartered Bank	These companies have explicitly supported water resources management, and climate change mitigation through agro-forestry practice for smallholder farmers, respectively.
	Tour Operators	Support sustainable financing for tourism through supporting development of eco-lodges, developing tourism packages with communities in remote and biodiversity hotspots, among others

### 3.3.4 Key civil society biodiversity finance actors

Uganda's civil society plays a leading role in biodiversity conservation. The key roles for civil society in biodiversity management in the implementation of NBSAP II were proposed as: (i) carrying out awareness-raising activities on the NBSAP; (ii) assisting to strengthen the capacity of community-based organisations to implement NBSAP; (iii) facilitating technology transfer at community level; (iv) promoting networking opportunities, especially among NGOs and other civil society organizations; (v) documenting indigenous knowledge, technologies and practices in biodiversity conservation; and (vi) assisting CBOs and communities to formulate and implement projects related to biodiversity conservation (NEMA 2016).

Civil society has been markedly active in biodiversity management finance in the country. Indeed, the history of biodiversity conservation finance and adoption by public sector involves pioneer innovations first promoted by civil society (Table 8). Actors from research institutions and universities public and private are often providing solutions akin to civil society. They include universities the leading universities in biodiversity management research and training are; Makerere University Kampala - public, Uganda Martyrs University Nkozi – affiliated to church/private, Mbarara University of Science and Technology (MUST) – public, Busitema University and Gulu University which are both public universities.

**Table 8: Examples of institutional contribution of civil society to biodiversity management**

Types of financing interventions	Civil society actors or institutions involved	Financing innovations trialled
Advocacy and policy development	Advocates Coalition for Development and Environment	A leading advocacy organisation on increased financing for biodiversity conservation. Also leading on improved governance especially financial governance for biodiversity conservation
	Wildlife Conservation Society (WCS)	Supporting establishment of the Uganda Biodiversity Fund with support from USAID. Also engaged in mobilising funds and policy engagement on environmental policy reforms
	Environmental Alert	Supporting policy reforms in the Water and Environment and Agriculture sectors in the country, including biodiversity financing
	National Association of Professional Environmentalists (NAPE)	Leading advocacy group against incentives and subsidies for biodiversity destruction. Also, an advocacy group on increased financing for biodiversity conservation.
	International Fund for the Conservation Nature (IUCN)	Supporting mobilisation of funds for forest landscape restoration (FLR), and water resources management.
	World Wide Fund for Nature (WWF)	Supporting mobilisation of private and international finance for piloting and mainstreaming biodiversity conservation instruments including payments for environmental services, and biodiversity conservation funds
Biodiversity conservation and climate change financing	Environment Conservation Trust (ECOTRUST)	Support agroforestry in agricultural landscapes especially with smallholder farmers for climate change mitigation and adaptation. Implementing the Plan Vivo voluntary carbon standard. Piloting several funds with biodiversity conservation intent including carbon and adaptation funds.
	Tree Talk	Supporting tree planting for reforestation in northern Uganda. Also support implementation of Plan Vivo voluntary carbon standard
	Vi Agro-forestry	Support agroforestry in agricultural landscapes especially with smallholder farmers for climate change mitigation and adaptation
Mobilisation of financing for biodiversity conservation	Care International in Uganda	A leading advocate for improved natural resource governance,
	International Gorilla Conservation Programme (IGCP)	A coalition of international conservation organisations, Fauna and Flora International (FFI) and WWF dedicated to conservation of Mountain Gorillas in Uganda, Rwanda and the Democratic Republic of Congo (DRC)
	Nature Uganda, Chimpanzee Sanctuary and Wildlife Conservation Trust (CSWCT), Conservation Through Public Health (CTPH), Pro-biodiversity Conservationists in Uganda (PROBICO), among others	There are several specialist conservation agencies working in Uganda, some national and several others international. These organisations mobilise financing for biodiversity conservation for specific species of biodiversity such as birds, mammals. Other specialisations are towards treatment of wildlife diseases and identification of contamination for communities. Others are specialised in creation of wildlife habitats as a financing solution, and waste management solutions for destruction of biodiversity, among others.

### 3.3.5 Key development partner biodiversity finance actors by process

International development and donor institutions and organisations have been pivotal to mainstreaming of biodiversity conservation through support of instruments for biodiversity management. The support has been extended to civil society, private sector and public sector projects and policies, respectively. Among the leading partners for biodiversity management are; the United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), United Nations Industrial Development Organisation (UNIDO), and the UN Food and Agriculture Organisation (FAO).

At the multilateral level, the World Bank, African Development Bank (AfDB), European Union, and bilateral donors such as the German, Norwegian, Swedish and United States Governments have been instrumental in the success of old and on-going efforts for biodiversity management. Table 9 highlights examples of donor engagement in financing biodiversity management.

**Table 9: Biodiversity financing engagement by development partners**

Type of engagement	Development partner	Biodiversity finance solution
Policy development	World Bank, AfDB	Support climate and use of high level standards in execution of public sector projects for infrastructure, agriculture, energy among others. Support compliance on environmental impacts, sustainable consumption and production, among others
	USAID	Support development of instruments for biodiversity conservation for Ministries Departments and agencies through the USAID Biodiversity Programme, including initiating funding mechanisms.
	European Community	Support public sector development sustainable production and consumption and adaptation of modern instruments for development and biodiversity conservation in energy, environment and natural resources management and climate change.
	UNDP	Support implementation and mobilisation of funds for testing and scaling up instruments on sustainability, green growth and climate change and biodiversity.
	FAO	Supporting implementation of biodiversity management in forestry, agriculture and climate change policies
	UNEP	A key support of policy instruments for biodiversity conservation including the NBSAP and State of Environment Reporting processes.
	Norwegian Government	Support policy and regulatory instrument development including biodiversity conservation for oil and gas sector, forestry sector among others.

Type of engagement	Development partner	Biodiversity finance solution
Biodiversity conservation and climate change financing	German Government	German government through UNDP, and German Government agencies such as GIZ and KfW has supported water resources management, energy and agriculture in towards biodiversity management targets.
	Global Environment Facility	A major multilateral funding arm on biodiversity conservation, climate change and sustainable land management
	Green Climate Fund (GCF)	The GCF has opened up to Ugandan projects and it projected to support wetlands and climate change management as well as other Nationally Appropriate Mitigation Actions (NAMAs) with biodiversity outcomes
	DFID	DFID has supported development of research and knowledge linking climate change actions and biodiversity conservation by financing research under the Climate Development Knowledge Network (CDKN) and other initiatives under OXFAM among others.
	UNIDO	Supporting piloting of climate change adaptation and biodiversity conservation technologies in agricultural value chains in Uganda
Mobilisation of financing for biodiversity conservation	USAID	Supporting establishment of the Uganda Biodiversity Fund
	World Bank	Supported piloting of biodiversity offsets in Uganda including mobilisation of funds
	UNDP UNIDO, UNEP, FAO	UNDP - supported of mobilisation of funds for adaptation funds, NAMAs with GEF, GCF, and carbon funds, among others. FAO, UNEP and UNIDO also mobilising similar resources
	East African Community, Nile Basin Initiative	Supporting mobilisation of funds for transboundary biodiversity such as the Lake Victoria, the Nile Basin, and other resources.
	African Union	Supporting adopt of standard practice in agriculture, health care, education and infrastructure development with resource mobilisation for biodiversity management
	China Government, Japan Government	Major funders for infrastructure development. Integrating biodiversity management standards in their financing strategies.

### 3.4 Finance mechanisms, legislation and arrangements

*Table 7*, delineates 14 financing mechanisms, their legal basis, the agents managing the mechanisms, source of funds and impact on biodiversity. The financing mechanism are: environmental taxes, environmental compliance charges and fees; local government based charges and mechanisms; resource rents and royalties; international funds; Non-Tax Revenues (NTR); revenue, benefit sharing and access to resources; conservation funds; biodiversity finance mechanisms, specifically payments for ecosystem services; renewable energy finance windows; subsidies; central government transfers; private sector financing and Overseas Development Assistance (ODA).



Finance mechanisms for biodiversity are continually growing and responding to emerging challenges. For instance, at the recently concluded UNFCCC Conference of Parties in Paris, Uganda joined several other parties to announce contributions to AFR100: A plan to restore 100 million hectares of degraded and deforested landscapes in Africa by 2030 and Africa Resilient Landscape Initiative. An international perspective on resilient landscapes will be given by WRI and the World Bank. Uganda will contribute 2.5 million hectares to the proposed total number of trees.

A lot of finance mechanisms are being tried with varied success. Some approaches which were thought to contribute to biodiversity conservation financing such as fees and charges under Beach Management Units (BMUs), and Forestry levies for the District Forest Service (DFS) have been abused or poorly enforced leading to loss of biodiversity instead.

There is considerable scepticism among key actors towards instruments such as payments for ecosystem services (PES). There are governance concerns on whether financing through District Local Governments and Central Government institutions can be achieved with the stringent financial oversight. Therefore, many private sector and international funds are still channelled directly to NGOs and CSOs. Whereas the governance concerns may be the case of absence of public sector engagement may deny a large section of the population from engagement into the financing. Several NGOs are piloting approaches for involving entire communities such as the community environment conservation fund (CECF) under IUCN and the landscape restoration actions under WWF.

The use of climate finance for biodiversity conservation was also a strong component as well as the use of environmental conservation funds. The level of innovation in these funds has allowed increased international participation that increased potential for scaling-up.

**Table 10: Finance mechanisms, legislation and contribution to biodiversity conservation and/or degradation**

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
<b>Environmental Taxes</b>				
1. Environmental Levy	Public Finance Act 2015	Avoided pollution with heavy metals and chemicals to wetlands, and water catchments and air pollution	private sector - car importers, indirect tax to consumers	URA, MFPED
2. Environmental Taxes	Oil and gas revenue management policy (2008)	Avoided pollution from spills, waste and industrial activities	private sector oil companies	URA, MFPED, Petroleum Authority
<b>Environmental compliance charges</b>				
1. EIA Fees	EIA Regulations 1998, National Environment Act Cap 153	Compliance to national environmental management standards	Private developers Public sector developers	NEMA
2. Enforcement Fines & Charges	National Environment Act Cap 153 Water Act cap 153	Penalties to comply to national environmental management standards	Private developers Public sector developers	NEM
3. Performance Bonds	under the National Environment Act Cap 153	Preventive charge for compliance to environmental management standards	Private developers Public sector developers	NEMA/MFPED
4. Economic Instruments for the Oil and gas Sector	Revised National Environment Bill	Compliance to national environmental management standards	Oil Exploring, and production companies	NEMA
5. Wetland User Permit Fees	National Environment Act Cap 153	Resource use regulation charge		NEMA
6. Wetland Restoration orders	National Environment Act Cap 153 Water Act cap 153	Penalties to comply to national environmental management standards		NEMA
7. Biodiversity Offsets	Revised National Environment Bill	Compliance to national environmental management standards	Private developers in Protected Areas	NEMA

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
8. Water abstraction permit fees	Water Act cap 152	Resource use regulation charge	Hydropower abstraction	DWRM/MWE
9. Water source protection charge	Water Act cap 152	Compliance to national environmental management standards	companies abstracting for process or industry Public water utilities	DWRM/MWE
10. Effluent discharge permits fees	Water Act cap 152	Compliance to national environmental management standards	Industry that releases effluent Public water utilities	DWRM/MWE
<b>Local Governments – District, City, Municipal, Town &amp; sub-county fees</b>				
1. CDM PoA municipal solid waste project	Local Government Act cap 234	Aimed at improving solid waste management and producing high quality organic manure for use on farms, also achieve GHG emissions reductions	World Bank, Municipalities and NEMA	NEMA
2. Fish levies for boats, fish mongers and fishing license	Fish (Beach Management) Rules, 2003 (S.I. No. 35 of 2003)	Originally intended to limit the fishing effort to sustainable levels. The instrument has failed and instead increased fish effort and also encouraged illegal fishing practices	Fishers and fish traders	District Local Government, Fisheries Officers BMU committees with fishing community stakeholders
3. Charges on timber and wood fuel (license to harvest timber or produce charcoal, movement permit)	National Forestry and Tree Planting Act, 2003	The charges are aimed at ensuring an accurate record of wood trade and to collect rents for the District Local Government The instruments use inadequate measure tools for license and the governance process has been abused encouraging deforestation instead	Wood products producers and dealers	District Forest Service National Forestry Authority (mostly in monitoring activities for central forest reserves)

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
<p>4. Creation of catchment management organizations/ committees developing catchment management plans</p>	<p>Water Act cap 152 Catchment Management Guidelines</p>	<p>The country divided into four water management zones, sub-regional centres DWRM and catchments created with local management structures. Given regulatory mandate with support of DWRM to plan for sustainable management of catchments based on guidelines including putting financial resources together for managing the catchment</p>	<p>GOU from DWRM, District Local Governments, private sector beneficiaries of the catchment, the communities living in the catchment through subscriptions through small sub-catchment committees that aggregate at catchment level</p>	<p>Directorate of Water Resources Management, District Local Governments</p>
<p><b>Resource Rents</b></p>				
<p>1. Minerals and Oil and gas sector resource rents &amp; royalties</p>	<p>Oil and gas revenue management policy (2008) Mining Act 2003</p>	<p>Returns for resource extraction to government on behalf of citizens.</p>	<p>Oil and gas companies revenues Mineral Exploration, Development companies</p>	<p>URA, MFPED, Petroleum Authority MEMD-Directorate of geological Survey and Mines</p>
<p><b>Biodiversity Finance Instruments</b></p>				
<p>1. Payments for Ecosystem Services</p>	<p>Proposed under Revised National Environment Bill</p>	<p>Incentives for stewards of ecosystems and ecosystem services for actions to conserve functioning of ecosystem</p>	<p>Beneficiaries of ecosystem services often subsidies with development partner, private sector and government support</p>	<p>WMD, NEMA, WCS, CSWCT, IIED, Stanford University, IIED, NAHI, Innovations for Poverty Action (IPA), WWF</p>

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
<b>International Funds</b>				
1. Green Climate Fund (proposal)	UNFCCC in support of Rio MEAs	Investing in low-emission and climate-resilient development. GCF was established by 194 governments to limit or reduce greenhouse gas (GHG) emissions in developing countries, and to help vulnerable societies adapt to the unavoidable impacts of climate change e.g. wetlands management	Global climate adaptation and mitigation funds commitments by Developed Countries	WMD
2. Global Environment Facility (Sustainable Land Management, Territorial Approaches to Climate Change, Albertine Rift Sustainable Environment Management etc.)	Convention on Biological Diversity, UNFCCC, UNCCD	Support implementation biodiversity conservation priorities in the NBSAPs	Parties to the CBD	NEMA
3. Emissions of Reductions for carbon – CDM, voluntary carbon projects	UNFCCC, National Forestry Policy (2001), National Forestry & Tree Planting Act, 2003	Afforestation and reforestation activities in Natural Forests	World Bank Bio Carbon Fund	NFA
4. Emissions of Reductions for carbon – REDD+	UNFCCC, National Forestry Policy (2001), National Forestry & Tree Planting Act, 2003	Reduced deforestation and forest degradation	Currently World Bank and European Union	NFA
5. Revised National Forestry and Tree Planting Bill	Electricity Act 1999, Renewable Energy Policy, 2007	Scaling-up Renewable Energy in Low Income Countries Program (SREP)	United Nations, African Development Bank	MEMD/AfDB/ MFPED
6. Climate Investment Funds (CIF)				

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
<b>Non-Tax Revenue</b>				
1. Round wood harvest fees for plantations	National Forestry & Tree Planting Act, 2003	Sustainable production of timber for country's needs in plantations.	private sector, public institutions, CSOs	NFA
2. Concessional Land leases under Sawlog Production Grant Scheme (SPGS)	National Forestry & Tree Planting Act, 2003	Increase sustainable production of timber to meet the country's needs	European commission co-financing private sector, public institutions, CSOs	NFA
3. Concessions for ecotourism	National Forestry & Tree Planting Act, 2003	Increase Public-Private-Partnership and private investment in conservation	private sector, public institutions, CSOs	NFA
Uganda Wildlife Act Cap 200				
5. Gate Fees or entrance fees	Uganda Wildlife Education Centre Trust Deed of 1994 National Forestry & Tree Planting Act, 2003	Obtain revenues for running institution and manage number of visitors	Tourists and visitors	UWA, NFA, UWEC
Uganda Wildlife Education Centre Bill				
6. Tourism Packages fees (hot springs, Mt. climbing, game drives, sport fishing, research tours, birding, boat launch, bush camping, caves, chimp tracking, cultural encounters, gorilla tracking, forest walks, Mt. biking	National Forestry & Tree Planting Act, 2003	Obtain resources for managing biodiversity under jurisdiction of institution  provide tourists and visitors with a quality service and experience	Tourists and visitors, Private tourism companies, tour operators, etc.	UWA, UWA, NFA, UWEC
7. Revenue Sharing with communities neighboring PA.		Enhance community participation in forest conservation and conservation of protected areas e.g. National Parks	A percentage of gate collections	UWA



<b>Finance mechanism/ subsidy</b>	<b>Sector and Legislation</b>	<b>Contribution to biodiversity conservation</b>	<b>Source of funds</b>	<b>Agent</b>
8. Commercial activities (semen, eggs, ova, embryos and equipment; fish brood stock, open nucleus breeding & reproduction extension services & property breed and recorded good quality livestock to farmers).	The Animal Breeding Act 2001	Raise revenue to maintain livestock diversity in the country	Clients	NAGRC&DB
	National Agricultural Research Systems (NARS), 2005	Raise high quality breeds and stocks for distribution to farmers	Research partners/ Development Partners	NaLIRRI
<b>Revenue, Benefit sharing and Resource Access</b>				
1. Collaborative Forest Management arrangements or collaborative resource management	National Forestry and Tree Planting Act, 2003	Enhance community participation in forest conservation and conservation of protected areas e.g. National Parks	Communities in areas neighboring the protected area who make a commitment to supporting sustainable management of P.A.	UWA, NFA
	Uganda Wildlife Act Cap 200	Benefit sharing of ecosystem services within tourism or production zone the P.A		
2. Wetland user committees	National Environment Act Cap 153,	Enhance community and sustainable use of wetland resources	Communities neighboring resource and review persons with clear sustainable plan	WMD, NEMA, District Local Government
	National Wetland Policy 1995	Limit degradation from encroachers	Communities neighboring resource and review persons with clear sustainable plan	DWRM, DWD, WFP
3. Catchment Management Committees	Uganda Water Act Cap 152	Enhance community and sustainable use of water resources and the catchment		
	Catchment Management Guidelines	Limit degradation from encroachers		
<b>Conservation Funds</b>				
1. Uganda Biodiversity Conservation Fund	Proposed under Revised National Environment Bill	Provide a funding pool for all biodiversity conservation actions in the country	Development Partners, Private Sector, Government, NGOs, private endowments	Wildlife Conservation Society/ USAID NGOs/ Civil Society
	Uganda Wildlife Act Cap 200			

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
2. Bwindi Mghahinga Conservation Fund	Uganda Wildlife Act Cap 200	Provide incentives for communities to contribute to Mountain Gorilla Conservation in Bwindi Impenetrable and Mghahinga Gorilla National Parks	An endowment fund set up with support of the World Bank, GEF and co-funding from Government, and investments on the New York Stock Exchange (NYSE)	MTWA, MFPED, Bwindi Mghahinga Conservation Trusts, communities neighboring the two Parks
3. Community Environment Conservation Fund	Uganda Water Act Cap 152 Catchment Management Guidelines National Forestry and Tree Planting Act, 2003	Support Forest Landscape Restoration; and catchment management through providing livelihoods for integrated water resources management (IWRM)	Development Partners, private sector and Government (DWRM)	IUCN Uganda Country Office – CSO/NGO
4. EBA Climate Adaptation Fund for Mt. Elgon Ecosystem	Proposed under Revised National Environment Bill proposed Climate Change Act National Climate Change Policy Within Structures of Non-Governmental Organization (ECOTRUST)	Adaptation through landscape restoration activities and supporting agricultural livelihoods and soil and water conservation practices	German Government Funds – federal Ministry for Energy and Nature	Environment Conservation Trust (ECOTRUST), UNDP EBA project
5. Carbon Bank for Mt. Elgon Ecosystem	Uganda NGO Registration Act 1989	Reforestation actions and establishing a fund to buffer carbon sequestration mitigation for verified emission reductions under the Plan Vivo Standard	UNDP Regional Service Centre Environmental Management Project	ECOTRUST, UNDP Regional Service Centre for Africa

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
<b>Energy standards and compliance programs</b>				
1. ISO 50001	ISO an independent, NGO international organization with membership of 162 national standards bodies. It brings together experts to share knowledge and develop voluntary, consensus-based, market relevant International Standards that support innovation and provide solutions to global challenges.	Using energy efficiently helps organizations save money as well as helping to conserve resources and tackle climate change.	Private company compliance investments	MEMD – Directorate of Energy Resources
2. Comprehensive Feed-in-Tariff (FIT) policy	Energy Policy 2002 Renewable Energy Policy 2007,  Electricity Act 1999	Increase private sector investment in electricity generation  Increase renewable energy options as a means of generating sustainable energy	UETCL and payments passed on to customers	Uganda Electricity Transmission Company in MEMD
<b>Subsidies</b>				
1. Support for paddy rice farmers for increased production through seed, fertilizers and extension support	National Agriculture Policy, 2013  Agriculture Sector Development Strategy and Investment Plan 2010/11 – 2014/15	Conversion of wetlands for paddy rice ensures higher productivity for rice.  Clearing of trees for upland rice production also leads to biodiversity loss. No compliance actions undertaken	Government through NAADS,  Donors – JICA MAAIF	Government of Uganda/ NAAADS
2. Soft compliance support, through trainings	Water Act cap 152  National Environment Act cap 153  Catchment Management Guidelines	Training of effluent discharging industries on proper effluent management and cleaner production practices. The aim is to reduce effluent discharge into water catchments, wetlands and on land and surface water systems.	Central Government Funds, DWRM, NEMA	DWRM, NEMA, WMD  Directorate Environment Affairs, MWE

<b>Finance mechanism/ subsidy</b>	<b>Sector and Legislation</b>	<b>Contribution to biodiversity conservation</b>	<b>Source of funds</b>	<b>Agent</b>
3. Construction of Roads and other infrastructure (Roads and Railway) through wetlands	The National Transport Master Plan, Uganda National Roads Authority Act, 2006, The Roads Act, 1964, Uganda Railways Corporation Act Cap 331	To reduce the cost of compensations, sections of road go through public lands of wetlands without compensation  Interferes with due diligence compliance actions under EIA and Environmental Audits, as well as Wetland Use Guidelines, and Catchment Management Guidelines	Central Government – Tax revenue  Development partner grants and loans	Ministry of Works and Transport  Uganda National Roads Authority
4. Provision of agricultural fertilizers to farmers under NAADS to increase agricultural productivity	National Agriculture Policy, 2013 Agriculture Sector Development Strategy and Investment Plan 2010/11 – 2014/15	Increase agricultural productivity through supplying fertilizers. If the fertilizers are poorly used this could lead to leaching and washing away of nutrients with storm water in rivers, wetlands and lakes.	Central Government Funds with a Loan from the World Bank	Government to farmers under NAADS Commercial monoculture (Oil palm, cotton, vegetable oil crops, sugarcane)
<b>Central government transfers</b>				
1. African Forest Landscape Restoration Initiative	National Forestry & Tree Planting Act 2003 National Climate Change Policy, 2013; UNFCCC	Government of Uganda has promised to restore up to 2.5 million hectares of degraded and deforested landscapes by 2030.	Government of Uganda transfers to NFA, District Local Governments	Forestry Sector Support Department NFA District Forest Service
2. Sectoral Allocations to MWE and its Agencies, MTTI and its agencies, MAAIF and its agencies	Public Finance Act 2015	Budgetary allocation for biodiversity conservation commitments in the National Development Plan and Vision 2040	Government of Uganda transfers	MWE/ MFPED

<b>Finance mechanism/ subsidy</b>	<b>Sector and Legislation</b>	<b>Contribution to biodiversity conservation</b>	<b>Source of funds</b>	<b>Agent</b>
3. Budgetary Allocations to Local Government specifically PAF Funds for Wetland Management	Public Finance Act 2015	Budgetary allocation for wetland conservation and staff salaries for undertaking environmental management commitments in the National Development Plan and Vision 2040	Government of Uganda transfers	MWE/ MFPED
4. Salaries for Natural Resource Department Staff				District Local Governments Ministry of Local Government
<b>Overseas Development Assistance</b>				
1. Farm Income Enhancement and Forest Conservation Project	National Forestry & Tree Planting Act 2003	Forest restoration on private land and restoration of wetlands	AfDB Loan and Government co-funding	FSSD, NFA,
2. Mt. Elgon Region Environment Conservation (MERECEP)	Lake Victoria Basin Commission Protocol - protocol for sustainable development of L. Victoria Basin signed on the 29th November 2003 and its ratification in December 2004,  Treaty for the Establishment of the East African Community was signed in Arusha on 30 November 1999.	Restoration and sustainable management of the key water catchments for Lake Victoria	Department for International Development, United Kingdom	Lake Victoria Basin Commission, Lake Victoria catchment in Uganda, Mt. Elgon ecosystem in partnership with the Mt. Elgon ecosystem District Local Governments
3. Environment Capacity Building Project;	National Environment Act cap 153 National Environment Management Policy 1994	Supported development of tourism infrastructure & technical capacity for NEMA		NEMA/World Bank
4. Protected Areas Management and Sustainable Use Project;	Uganda Wildlife Act Cap 200	Supported development of tourism infrastructure & technical capacity for UWA		UWA/World Bank

Finance mechanism/ subsidy	Sector and Legislation	Contribution to biodiversity conservation	Source of funds	Agent
<b>Private Sector</b>				
1. Corporate Social Responsibility (Coca Cola, Standard Bank Uganda, Standard Chartered Bank, MTN, Airtel, URA,,,"	Private corporate social responsibility funds, Corporate outreach	Giving back to consumer communities and contribution to poor communities' welfare	A share of net profits of corporation, staff contributions	Usually National and international NGOs and CSOs
2. Catchment Management financing (Coca Cola, Bugoye Hydropower, KCCL, Hima Cement ...	Investment pack in reducing operational costs	Catchment restoration activities to reduce siltation in the water, mudslides and close of operations that lead to revenue losses	A share of net profits of corporation as a strategic investment	District Local Governments and National and international NGOs and CSOs
3. Certified organic agriculture and Sustainable Agricultural Commodities	National Agricultural Policy, 2013  Draft Organic Agriculture Policy	Producing food in a complete cycle with minimal external inputs and compliance to high organic standards.	Premium organic preferring consumers usually in Europe, North America and Asia  Private investments of farmers and exporting firms.	National Organic Agriculture Movement of Uganda, Crop Production and Marketing Department – MAAIF, Uganda Export Promotions Board



### **3.5 Institutional arrangements and distribution of benefits and costs**

For all biodiversity and ecosystem management in Uganda as prescribed in the national constitution, the governance is undertaken at both national/central government and local government levels. The institutional actors at the national level are the MDAs while at the local governments these actors are the departments of the District and Sub-county local governments.

#### **3.5.1 The Agriculture Sector**

##### **3.5.1.1 Institutional roles and arrangements**

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is the central policy and institutional coordination agency for the Agricultural Sector. The sector's activities are undertaken at the central government level in the MDAs and at the local level by District Local Government Agricultural Departments.

There are eight agencies in the Ministry; the Cotton Development Organisation (CDO), Coordinating Office for the Control of Trypanosomiasis in Uganda (COCTU), the Dairy Development Authority (DDA), National Agricultural Advisory Services (NAADS), National Agricultural Research Organisation (NARO), the Plan for Modernisation of Agriculture (PMA), Uganda Coffee Development Authority (UCDA), and the National Animal Genetic Research Centre and Data Base (NAGRC&DB). The key biodiversity centres are the Ministry itself, NARO and NAGRC&DB. The other agencies play a more complementary role through extension and input support to farmers and play a crucial role in ensuring that biodiversity services or technologies flow from the ministry and NARO and NAGRC&DB to farmers. Some of the MDA may also play a harmful role in biodiversity in supporting certain activities that harm the environment even though they benefit agricultural production.

MAAIF headquarters is divided into three Directorates on Animal Resources, Crop Resources and Fisheries Resources. The Animal Resources Directorate has two departments: 1) animal production and 2) livestock health and entomology. The Crop Resources Directorate has two departments: 1) crop protection and 2) crop production and marketing. The Directorate for fisheries resources has three departments: 1) the aquaculture management and development department, 2) fisheries resources management and development (natural stocks) and 3) the fisheries control, regulation and quality assurance.

##### **3.5.1.2 Existing and potential distribution of benefits**

The institutional structure was created to delineate the functionality of the sector. The principal functions include policy, regulatory and strategy development and oversight. The three directorates on crop, livestock and fisheries represent the three resource of the sector. The existence of the Ministry structural unit allows for strong interface with District Local Governments, which have a set up that includes production officers catering for crop production, livestock and fisheries at District or City level to sub-county and/or municipality or town council level.

The creation of agencies was aimed to strengthen functions given the importance of the sector to the national economy and local livelihoods, contributing to at least 21%

of GDP. Therefore, agencies were created to cater for important commodities such as coffee, cotton and dairy production and marketing.

The National Agricultural Research Organisation was created to cater for research under a number of institutes and zonal agricultural research and development institutes (ZARDIs). The key research institute where biodiversity conservation for crop production is concentrated is the National Agricultural Research Laboratories (NARL), Kawanda. NARL is operated through units that come together to form the larger institute. They include: the Agricultural Research Information Service Unit (ARIS), which coordinates library, documentation and information activities within NARO; the Biological Control Unit that works to incorporate biological control as a basic sub-discipline reinforcing plant protection in agricultural food cropping systems in Uganda. Examples of biological control using fungi and insects have been used in banana weevil and water hyacinth control, respectively. The National Agricultural Biotechnology Centre contributes to increased agricultural productivity through development of novel products using biotechnology tools. Deployment of these tools will raise both increased research efficiency and deliver products previously impossible to generate through conventional means; the Plant Genetic Resource Centre (PGRC) an entity comprising the historical Entebbe Botanical Gardens (EBG) and the Uganda National Gene Bank (UNGB). PGRC collects and maintain stocks of diverse plant germ plasm, enhances utilization of germ plasm through characterization, evaluation and genetic enhancement, develops information and documentation systems and strengthen linkages among stakeholders, promotes community based and on-farm conservation of PGR as a basis for sustainable natural resource management and enhances the role of the Botanical Gardens in national development.

Under NARO, the research specialisation on livestock research is with the National Livestock Resources Research Institute (NaLIRRI) in Tororo, the National Forestry Resources Research Institute (NaFORRI), in Mukono District, and the National Fisheries Resources Research Institute (NaFIRRI) in Jinja. The focus of the other research institutes includes enhancing production of traditional cash crops including coffee, cocoa, cotton, oil palm, rice and food security crops such as cereals; maize, millet, sorghum, rice and pulses; beans, pigeon peas, soy bean among others. NaLIRRI; NaFORRI; and NaFIRRI conduct research on livestock resources including species, ecosystems and production and productivity, NaFORRI conducts research on forests, agro-forestry, biodiversity, production and productivity while NaFIRRI conducts research on fisheries production, sustainable management of the fishery and increasing its productivity to meet the food security challenges.

The institutional structure has also provided for increased agriculture extension support through the National Agricultural Advisory Services (NAADS). The NAADS programme provides enterprise and farming as business focus for extension services including providing inputs to boost productivity for farmers. The crops are allocated based on agro-ecological zones which were determined through research.

Given the importance of coffee and cotton, separate agencies were created to promote these crops as traditional export crop commodities. Increasingly efforts are focusing on value addition for both coffee and cotton to increase the value earned by stakeholders in the local commodity value chains.

Additional reinforcement for strategy development for the sector is in the Plan for Modernisation of Agriculture. Originally designed as the overall programme for agricultural development, the PMA secretariat has evolved into an agency for providing strategic planning framework and overall monitoring and evaluation implementation of agricultural policy and strategies in line with the NDP and Vision 2040.

The National Animal Genetic Resources Centre and Database (NAGRC&DB) was created under the Animal Breeding Act 2001 to support implementation of the National Animal Breeding Policy. The key functions of NAGRC&DB are: establishment, development and promotion of necessary breeding structures such as breeding associations and breeding societies and the National Livestock Registry; and performance and progeny testing schemes for the advancement of livestock animal breeding activities in the country. The organization has since 2003 been in charge of running 10 government stock farms and ranches. NAGRC&DB supports the commercial aspirations for the livestock sub-sector through: production, procurement and sale of semen, eggs, ova, embryos and their associated equipment; management of the centre's farms for production and selection of superior dams and sires; production and sale of founder brood stock of fisheries resources; and open nucleus breeding scheme and reproduction extension services to farmers of the centre and offer for sale property breed and recorded good quality livestock to farmers.

### **3.5.1.3 Existing and potential distribution of costs**

The institutional structure of the Agricultural sector is quite large with many institutions. There is a risk some of the responsibilities are being duplicated. For instance, by having NAGRC&DB and then NaLIRRI conducting closely related activities would lead thinly spreading limited resources which minimises impact.

In other cases, it does seem that some management units have too many activities for which they provide oversight which might limit efficiency. It is clear that PGRC conducts a lot of activities and alongside eight other units with a similar size means that there is a risk of under supervision. It may be possible to reallocate some of the units to increase their performance. Crop biodiversity conservation may be better served if the role of PGRC within NARO were strengthened.

The duplication of policy, strategy, and monitoring and evaluation between the Ministry headquarters and the PMA secretariat seems to increase administrative costs for the sector. Moreover, it is unclear whether there are any intentions to full implement the aspirations of the PMA that showed a strong cohesion with biodiversity conservation and environmental management. The PMA secretariat can be re-integrated as part of the planning and policy department of the main ministry.

The current institutional structures of the sector link the sector to local governments through the structures of the District Local Government. Even though the NAADS programme exists, the sector is disconnected with the implementing officers in the field. This seems to affect the performance of the other agencies such as the Coffee Development Authority (UCDA), the Cotton Development Organisation (CDO) and the Dairy Development Authority (DDA). Biodiversity conservation would benefit from a closer interface between the policy and planning arm and the implementers of policy.

## 3.5.2 Energy and Mineral Development Sector

### 3.5.2.1 Institutional roles and arrangements

The Energy and Mineral Development sector is overseen by the Ministry of Energy and Mineral Development (MEMD) with additional structures catering for private sector, Local Governments and CSO participation. The MEMD is made up of three Directorates: Energy Resources, Geological Surveys and Mines and Petroleum. The institutional structure until recently only had two agencies: the Electricity Regulatory Authority (ERA) and the Rural Electrification Authority (REA). However, Since September 2015, a third agency, the Petroleum Authority, was created in the Ministry. The institutional structure also includes a tribunal, a council and as well as three energy companies in the Energy sub-sector; the Electricity Disputes Tribunal (EDT), Atomic Energy Council (AEC), Uganda Electricity Generation Company, Uganda Electricity Transmission Company and Uganda Electricity Distribution Company. There are administrative functions also performed under the office of the Permanent Secretary.

The mandate of the MEMD is to establish and promote the development, strategically manage and safeguard rational and sustainable exploitation and utilisation of energy and mineral resources for social and economic development. The Energy Resources Development directorate has four departments for Renewable Energy, Energy Efficiency and Conservation, Electrical Power and the Nuclear Energy Unit. Whereas the Nuclear Energy Unit presents a lot of future biodiversity concerns, the strategic framework is still under development. Therefore, the focus for this review will be for the other three departments.

### 3.5.2.2 Existing and potential distribution of benefits Renewable Energy Department:

Development of the National Biomass Energy Strategy (NBEST) 2014 to guide a systematic implementation of all interventions in Uganda's biomass energy sub-sector.

Development of legislation on biofuels, blending and utilisation – the proposed legislation seeks to promote and regulate production and utilisation of biofuels that can themselves or blended with petrol or diesel run motor vehicle engines or power plants). The draft bill was approved by Cabinet in May 2015 and awaits tabling and debate by Parliament.

Promotion of biogas technology at household and institutional level. The institutional biogas systems include bio-latrines, Domestic biogas systems, and Institutional rocket. Cook stoves are being promoted in selected educational institutions. Development of standardised baseline on improved institutional cook stoves – the baseline will help lower initial investment costs for CDM project developers and implementation of NAMAs.

Development of biogas standards – the MEMD partnership with UNBS initiated a process to develop standards for domestic biogas. The draft standards focus on: domestic biogas land specifications, domestic biogas stove specifications; code of practice – General, design; code of practice – fixed dome, and code of practice – balloon type and terms and definitions.

Development of Nationally Appropriate Mitigation Actions (NAMAs) on promotion of the use of Efficient Institutional stoves. The NAMA addresses barriers related to technology, investment, lack of knowledge and capacity, regulatory failures that have hampered widespread adoption of improved technologies in institutions with big catering needs.

The Green Charcoal project aims to secure multiple environmental benefits by addressing the twin challenge of unsustainable utilisation of fuel wood (including charcoal) and poor land management practices common in Uganda's wood loads through technology transfer, enhancement of national policy framework and promotion of sustainable land management and sustainable forest management (SFM) practices. The four Districts covered are Mubende, Kiboga, Nakaseke and Kiryandongo which are part of the cattle corridor. Projects are financed by the Global Environment Facility at the amount of \$3.48 million under the GEF cycle 5.

Support development of a market structure at three levels: (a) establishment of umbrella association of Biomass Energy Efficient Technology Association ;(b) Creation of clean cook stoves and fuels (clean cooking solutions) sector alliance; (c) stove market development through technical and marketing support to private stove companies.

Wind and Solar Energy: Demonstration of small wind turbines for electricity generation i.e. systems of 200 watts and 1000 watts for electricity generation successfully installed in Kaberamaido, Napak, Buyende, Kotido, Namayingo and Mityana. Plans for rehabilitation of windmills in Karamoja. The windmills were used for pumping water. Solar PV technology in Nebbi, Kalangala and solar heaters in Lira Hospital. Identification of sites for pico-hydro sites greater or equal to 100Kw for development in Kasese District.

## Energy Efficiency

The minimum energy performance standards (MEPs) in collaboration with UNBS, MEMD has developed standards of MEPs which were gazetted by UNBS. These standards target appliances including air conditions, lighting appliances, electrical motors, freezers and refrigerators. The Ministry is also working with UNBS to include the appliances affected by standards on the (Pre-Shipment Verification of Imports) PIVOC list.

Energy labels for selected appliances – Energy efficiency labels are helpful and are affixed to provide products on markets to describe energy use and efficiency. This will guide consumers on which appliances to buy and use.

Energy audits in high energy consuming facilities with support of GIZ. The activities include baseline survey on energy consumption and production, energy audits to identify energy saving opportunities, training on energy management for key staff, and sensitisation on ISO 5001 – energy management standard requirements and implementation.

Distribution of light-emitting diode (LED) lamp products to replace incandescent (CFL) lamps and compact fluorescent lamps. This approach seeks to reduce high energy demand associated with CFL lamps.

Building capacity for co-generation of electricity from bagasse. The Ministry of supporting SCOUL to develop co-generation capacity of 9.5 MW of electricity for own use. However, the expanded sugar processing facility is expected to produce more energy for the national grid.

### **Electricity sub-sector**

Uganda has adopted the comprehensive Feed-in-Tariff (FiT) policy. This mechanism promotes deployment of renewable energy that places an obligation on specific entities to purchase the output from qualifying renewable energy generators at predetermined prices. The renewable energy Feed-in-Tariff (REFiT) aims at encouraging and supporting renewable energy technologies. The priorities for REFiT in phase II are small hydropower plants, geothermal power plants, bagasse power generation, land fill gas power, biogas, biomass or municipal solid waste and wind energy.

Other benefits of the FiT program is that the tariffs are not adjusted downwards if a renewable energy generator qualifies for certified emission reductions (DERs) or CDM revenues. This therefore provides an additional incentive. Standardised power purchase agreements have been developed by UETCL which has reduced administrative costs of protracted negotiations. The automatic grid interconnection and price flexibility. The REFiT policy mitigates off take risks and provides escalation factors for inflation.

Uganda is also participating in the global Energy Feed-in-Tariff GET FiT program to assist East African nations in pursuing a climate resilient low-carbon development path resulting in growth, poverty reduction and climate change mitigation. A portfolio of 15 small-scale renewable energy generation projects promoted by private developers with a total installed capacity of approximately 150MW will be fast tracked. This will add to much needed clean energy generation capacity, strengthen regional grids and result in emissions reductions to a tune of 11 million tCO<sub>2</sub>. A GET FiT premium payment mechanism is one of the instruments of the program.

### **Directorate of Geological Surveys and Mines**

The Mining Act 2003 elaborates actions for environmental protection under four categories of actions: 1) environment impact assessment and environmental audits, 2) environmental protection audits, 3) environmental restoration plan, 4) direction for protection of environment, and 5) environmental performance bonds. With regard to the environmental performance bond, the Act states that the Commissioner or Executive Director of NEMA may require the holder of an exploration or mining license to execute an environmental performance bond to ensure fulfilment of all environmental requirements under the Mining Act. The amount is dependent on the environmental restoration plan and reflects difficulty of restoration including factors such as geology, topography, hydrology and re-vegetation.

### **Directorate of Petroleum**

In 2008, the Government passed the Oil and Gas Revenue Management Policy (2008). The government has proposed a Fiscal Policy Management a long term development/fiscal strategy for the oil and gas revenues. One result of this policy is that there is room that some of the revenue could be invested in biodiversity conservation. A maximum



of seven (7) percent of royalty revenues arising from gross oil and gas production will be shared with local governments and communities, which will be directly affected by oil production. The remaining 93% is to be retained by the centre for the benefit of the entire country.

Additionally, an Environmental Sensitivity Atlas (ESA) for the Albertine Graben was developed in 2009 and updated in 2011. An Environment Monitoring Plan (2012-2017) for the Albertine Graben that defines the key monitoring indicators together with an enforcement and compliance strategy have been put in place and are being implemented.

Guidelines for operation of oil companies in Protected Areas have been developed. A Strategic Environment Assessment (SEA) for the oil and gas activities in the entire Albertine Graben was prepared and approved by the Government in July 2015. The National Oil Spill Contingency Plan is under development. Management plans for protected areas such as Murchison Falls National Park, Queen Elizabeth National Park, and Budongo Forest have been conducted and updated to provide for on-going and planned oil and gas activities within these areas of high biodiversity conservation.

A multi-institutional environmental monitoring team led by NEMA and comprising of UWA, Fisheries Resources Department, NFA, Directorate of Environmental Affairs, DWRM, District Local Governments and Directorate of Petroleum is in place to monitor the interface between the environment and petroleum activities. This is financed by....

### **3.5.2.3 Existing and potential distribution of costs**

Biomass energy continues to be a major source of energy going into the future. The institutional structure does not make clear commitments to supporting increased production of biomass fuel. Increasing efficiency and better use of biomass energy is unlikely to provide medium term solutions as the rate of deforestation is currently very high. Planting more trees or growing more biomass to counter the decline is the short to medium solution.

The energy alternatives proposed, in particular peats and geothermal, promise more incursions on protected areas and wetlands. These areas are already under enormous pressure of degradation. Moreover, peats and geothermal energy could cause considerable reversals to the country low carbon economy this could jeopardise financing for carbon-biodiversity conservation activities.

Competition for placing mini-hydro and large hydro projects in catchments alongside other land uses such as industry, agriculture and domestic use is a major concern in the key electricity producing areas such as Kasese District, and areas with strong potential such as the Mt. Elgon areas.

Mining activities have generally been located in landscapes that are fragile with a steep topography and are at risk of mudslides and heavy metal being washed into water courses with storm water. In Kilembe and the limestone mineral areas of the Mt. Elgon

the risks are quite strong. If inadequate safeguards are put in place not only would be restoration and resettlement costs be high but the long-term economic impacts could be substantial. Kasese Cobalt Company Limited for instance is using biological processes to break down deposits of cobalt ore at an industrial level; however, the impact of heavy metals seeping into surface water systems still exist.

The petroleum sub-sector has made considerable efforts to establish strong environmental controls. Whereas the risks associated with petroleum exploration and mining are significant, some of the crucially important concerns are the long-term impacts on the wildlife in the protected areas where certain petroleum activities are taking place. The changes in lifestyle will also create considerable changes in the opportunity costs of the communities within the oil producing area and strong effort needs to be in place to link oil and gas royalties and the strategic economy of the oil producing areas to be linked to existing biodiversity.

### **3.5.3 Water and Environment Sector**

#### **3.5.3.1 Institutional roles and arrangements**

The Water and Environment sector consists of two sub-sectors: the Water and Sanitation (WSS) sub-sector and the Environment and Natural Resources (ENR) sub-sector. The WSS sub-sector comprises water resources management, water development and sanitation and water for production. The ENR sub-sector comprises environmental management; forest sector support; management of wetlands and aquatic resources; and weather and climate. The institutional sector framework consists of:

- (i) The Ministry of Water and Environment with the Directorates for Water Development (DWD), Water Resources Management (DWRM) and Environmental Affairs (DEA);
- (ii) Local Governments (Districts and Town Councils), which are legally in charge of service delivery under the Decentralisation Act;
- (iii) A number of de-concentrated support structures related to MWE, at different stages of institutional establishment, including Technical Support Units (TSUs), Water Supply Development Facilities (WSDFs), and Water Management Zones (WMZs);
- (iv) Four semi-autonomous agencies: (i) National Water & Sewerage Corporation (NWSC) for urban water supply and sewerage; (ii) National Environment Management Authority (NEMA) for environment management; (iii) National Forestry Authority (NFA) for forestry management in Government's Central Forest Reserves; and (iv) the Uganda National Meteorological Authority (UNMA) for weather and climate services;
- (v) NGOs/CBOs (coordinated through UWASNET and ENR CSO Network) and Water User Committees/Associations;

#### **3.5.3.2 Existing and potential distribution of benefits**

The sector is subdivided into two subsectors with the Environment and Natural Resources almost entirely dedicated to biodiversity related activities while the activities under the Water Resources Management Directorate of the second sub-sector (Water and Sanitation) are also very closely aligned to biodiversity conservation. Even for the Directorates and Agencies not directly linked to biodiversity conservation, a lot of the activities undertaken can provide important synergies and also contribute to financing for biodiversity conservation. For instance, if the agencies contribute to water source

point protection and undertake adequate pollution management safe guards their contributions can contribute to biodiversity conservation.

The major concerns for biodiversity loss in forests, wetlands, fragile mountain and hill top ecosystems, lakes and river banks and waste management are effectively catered for within the institutional structure. Even though protected areas are under the jurisdiction of UWA and other wildlife management activities under UWEC and other agencies may fall outside the sector, the enabling institutional arrangements under lead agency support allows for coordination to be achieved.

The country has a robust environment impact assessment and environmental audit system and strong instruments on ecosystem restoration orders and resettlement action plans, among others. On-going revisions in the Environment Act and Policy will allow for strengthening biodiversity conservation instruments such as biodiversity offsets, payments for ecosystem services and charges and fees to support biodiversity conservation activities.

### **3.5.3.3 Existing and potential distribution of costs**

Reports on compliance to effluent discharge standards repeatedly point to the non-conformity of the national water utility, the National Water and Sewerage Corporation (NWSC). Indeed, the utility company is setting up additional effluent treatment stations to meet its obligations. However, regularly, the two institutions benefit from similar funds i.e. central government support.

Whereas the water utility and the Water Resources Department are in the same agency there are clear differences over where the effort for water resource maintenance should go. The Directorate of Water Development, the NWSC, and the Department of Water for Production all make investments in infrastructure to increase water access for commercial and domestic use. However, these infrastructure supporting agencies are reluctant to commit funds for water resource protection through catchment management activities as they indicate that these are already catered for in the budget of their sister agencies. Moreover, the largest budget for the sector is ceded to the infrastructure development components with very limited finance allocated to water resource protection.

The components on biodiversity conservation as articulated in the Vision 2040 and NDP2 seem mismatched to the performance reporting for the Water and Environment sector. The mismatch is largely because many of the environmental management activities occur outside the mother sector in industry, works and transport sector, and the energy sector and are therefore locally reflected in the reporting of this sectors. This reduces the likelihood of articulating additional or adequate funds for biodiversity conservation activities.

Over the years the size of the government agencies in the environment and natural resources sector has continued to decline. The components on land and soil were annexed to the Lands, Housing and Urban Ministry. These transformations weaken the ability for regulators such as NEMA to use the institutional structures to integrate adequate environmental management and/or biodiversity conservation in land use

planning. In the new government sector structure, environmental management is mainstreamed as a requirement but often limited on ability to have structural impacts on the performance of the sector.

### **3.5.4 Works and Transport Sector**

#### **3.5.4.1 Institutional roles and arrangements**

The Works and Transport Ministry has two directorates in its institutional structure. The directorates are Transport, and Engineering and Works, alongside the policy and planning, finance and administration, and internal audit and procurement departments. The agencies in the sector/ministry are: the Uganda National Roads Authority (UNRA), the Civil Aviation Authority (CAA), Uganda Railways Corporation (URC), National Road Safety Council, Engineers Registration Board, and Transport Licensing Board. The Ministry of Works and Transport provides operational and policy oversight in collaboration with the MFPED over the Uganda Road Fund (URF). URF is the public-private partnership arrangement for mobilising funds for maintaining public roads under the management of UNRA and Urban authorities such as KCCA.

#### **3.5.4.2 Existing and potential distribution of benefits**

Environmental and social undertakings aim to mitigate potential environmental and social impacts. The Sector Investment Plan (SIP) notes that assessment and mitigation processes can be costly and time consuming.

In 2004, the then Ministry of Works, Housing and Communication developed EIA guidelines for Road projects. The guidelines stressed and elaborated the processes of public participation through assessment and for integrating compensation and resettlement issues. The guidelines also deal with managing environmental and social considerations during road maintenance.

#### **3.5.4.3 Existing and potential distribution of costs**

The Works and transport sector has been added due to growing infrastructure investment at the national level. Under the current Medium Term Expenditure Framework (MTEF) and annual budgets since 2013/14, the Works and Transport has received the largest allocation of the national budget, about 20% of the overall budget. This prioritisation is associated with the MTEF's focus on infrastructure development also communicated in the NDP II and Vision 2040. However, this infrastructure development sector is one of those most disconnected from the aims of biodiversity conservation and the only clearly linkage seems to be through compliance to the National Environment Act cap 153 and the regulations under it such as the EIA regulations and Environmental Audit Regulations.

### 3.6 Institutional capacity and needs

**Table 11: Synthesis of institutional capacity and needs for biodiversity management at public sector level**

CAPACITIES	CAPACITIES								CAPACITY NEEDS
	1	2	3	4	5	6	7	8	
Strategic planning capacities	The ability to prioritise across a range of NBSAP strategies,	identifying those that are most efficient and cost effective in achieving national biodiversity and development goals	The ability to gauge the potential effectiveness of strategies and actions in achieving multiple goals, including both biodiversity and national development goals	The ability to develop agendas, budgets and plans across multiple agencies, divisions and departments, as well as across public and private actors	The ability to gauge economic and programmatic long-term trade-offs between multiple scenarios and to understand inter sectoral policy trade-offs	The ability to develop multiple scenarios for ecosystems and biodiversity including status quo scenarios and future biodiversity investment scenarios and to articulate the outcomes of these scenarios in terms of national development goals.	The ability to link national development goals to the integrity of natural ecosystems and to the flow of ecosystem services and natural capital stocks	The ability of ministries to re-align their plans and policies with overarching national goals and objectives	
Water and Environment Sector	High	High	High	High	Low	Low	Low	High	5,6,7,
Agriculture Sector	Moderate	High	High	High	Low	Low	Low	High	1,5.6.7.
Tourism Trade and Industry Sector	High	High	High	High	Low	Low	Low	High	5,6,7,
Energy and Mineral Development Sector	High	High	High	High	Low	Low	Low	High	5,6,7,
Works and Transport	Moderate	High	High	Moderate	Low	Low	Low	High	1,4,5.6.7.

CAPACITIES		CAPACITIES				CAPACITY NEEDS
	1	2	3	4		
Financial management and reporting capacities	The ability to develop strategies that will effectively address drivers of biodiversity loss	The ability to effectively manage the flow of financial resources within and across agencies, and ensure effective disbursement and execution of funds	The ability to calculate the impacts of perverse or conflicting incentives, and to be able to show counterfactual arguments for phasing out and eliminating these perverse incentives	The ability to provide transparent and accountable frameworks and systems for how funds are budgeted and allocated, disbursed and executed		
Water and Environment Sector	Moderate	High	Low	High	1, 3	
Agriculture Sector	Moderate	High	Low	High	1, 3	
Tourism Trade and Industry Sector	Moderate	High	Low	High	1, 3	
Energy and Mineral Development Sector	Moderate	High	Low	High	1, 3	
Works and Transport	Moderate	High	Low	High	1, 3	
Communication and persuasion capacities	The ability to develop a wide range of innovative partnerships across a range of actors, including public private finance partnerships.	The ability to counteract powerful interest groups that wish to maintain the status quo for natural resource depletion by making equally powerful economic arguments.	The ability to clearly communicate the benefits of shifting policies and practices towards a sustainable trajectory			
Water and Environment Sector	High	Moderate	Moderate		2, 3	



Agriculture Sector	High	Moderate	Moderate	2,3
Tourism Trade and Industry Sector	High	High	Moderate	3
Energy and Mineral Development Sector	High	Moderate	Moderate	2,3
Works and Transport	Moderate	Moderate	Moderate	1,2,3

## 4. DISTRIBUTION OF BENEFITS AND COSTS OF BIODIVERSITY MANAGEMENT

### 4.1 Introduction

The background to the description of the benefits and costs of management in Uganda is drawn from the NBSAPII (GoU 2016) report. NBSAPII report indicates that the key concerns regarding biodiversity management in Uganda include, among others:

- (i) declining species abundance largely due to over-harvesting and exploitation of biological resources including trees and woody biomass, for instance mahogany tree species;
- (ii) shrinking habitats for example, wetlands and forests. These losses are largely attributed to unsustainable use of biodiversity resources or habitat loss due to conversion of habitats into other commercial land/water uses or habitat degradation;
- (iii) local species extinctions, invasive species, human-wildlife- conflicts, encroachment on protected areas, agricultural expansion, climate change and variability, human wildlife conflicts, diseases in wildlife, illegal trade in plants, animals and derived parts, soil erosion and pollution;
- (iv) socio-economic pressures in the country including human population increase, poverty as well as political pressures which cause conflicts and insecurity, conflicting development policies as well as politics and public management; and
- (v) emerging challenges such as the recent discovery of oil and gas in the Albertine Graben;
- (vi) the increasing use of biofuels; and the more frequent incidences of disasters such as droughts, floods and mudslides associated with climate change impacts which can have a disastrous impact on biodiversity.

The distribution of the benefits and costs of biodiversity management under the status quo builds on the concerns raised, above. This following section provides a more detailed and description.

### 4.2 Distribution of benefits and costs associated with agriculture

Agriculture sector is the single most important sector to the Ugandan economy contributing more than one-fifth of all national income employment for more than two-thirds of the people living in rural areas (UBOS 2015). Because of its importance the agricultural sector has always been a target of Government subsidy programmes. Since 2001, the Government has implemented the National Agricultural Advisory Services (NAADS) programme where improved seed and inorganic fertilisers as well as pesticides are provided for farmers to boost agriculture production. Given the precedent of low input usage. However, these programmes have not been effective in fundamentally increasing agricultural productivity. Both the second National Development Plan (NDP2), and the Vision 2040 – the 30-year national plan for strategic development, highlighted the low agricultural productivity. The low agricultural productivity places considerable pressure on other ecosystems such as forests, wetlands, fisheries among others; to provide the necessary livelihoods to maintain the growing national population. Whereas the NAADS programme was not developed to contribute to NBSAP, it had been envisioned, under the Plan for Modernisation of Agriculture (PMA) that all programmes under PMA including NAADS would contribute to strategic environmental management including biodiversity management. At the national level, the rural farmers who were not able to increase productivity through increased fertiliser use or improved seed turned to the local forests for timber, wood fuel, and more fertile agricultural land. A study on

forest land conversion and food security conducted in central and western Uganda showed that one of the major causes of forest land conversion was leakage from other livelihoods like fisheries and agriculture. Communities that were engaged in fishing and crop production in neighbouring areas in the face of food insecurity and loss of livelihoods elsewhere encroached and deforested forests and/or converted wetlands at a very high rate (CIU 2014).

One of the critical concerns and costs of agriculture growth is loss of local species and cultivars of plants and plant materials. On the one hand, the emergence of large private seed producers and distributors occurs at the expense of seed and/or breeds and cultivar conservation programmes. The large seed distributors provide a concentration of highly productive lines of crop seed often at the expense of agro-biodiversity for crops. Karamura et al. (2011) suggested that the loss of such biodiversity in bananas for instance placed the survival of bananas and research into disease control and further increasing productivity and suitability at risk. The Plant Genetic Resources Centre (PGRC) an institution or department under the National Agricultural Research Laboratories (NARL), one of the institutes under the National Agricultural Research Organisation (NARO) has the sole responsibility of conserving and promoting the management of plant genetic resources in the country. However, physical capacity; the crop genetic resource bank, and the level of research conducted on genetic resources was not adequate to main the crop genetic diversity of the country. The loss of local species and cultivars of plants and plant materials will continue to occur under a status quo scenario.

Agriculture is also linked to forestry with the high dependence of agro-industry on biomass for production. The alternative sources of energy are biomass options such as crop residues and other wastes, and electricity. For agro-processing industries the use of electricity is considerable expensive given the amount of energy needed for tea, vegetable oil and tobacco processing, among others. Moreover, in the case of tea and tobacco industry the use of wood fuel is part of curing process and is essential for the processing activities. Given the high demand for energy in agro-industry there have been efforts to work with industry as part of environmental compliance and standards to plant their own woodlots, and many tea industries are complying with this but the compliance standards in industry are not available, it is the international competitiveness that has created the drive for many industries to have their own woodlots and support the use of alternative biomass sources such as crop refuse. The pressure for alternative energies is also forcing industry to improve efficiency and undertake activities of energy conservation. At regulatory level, NEMA too has adopted energy efficiency performance as a backing tool for environmental auditing activities which should provide additional benefits. However, the implementation of these energy efficiency is still limited and can certainly be increased across the country.

#### **4.3 Distribution of benefits and costs associated with forestry management**

Between 1990 and 2005, it was believed that forest and conversion for agriculture was the leading driver of forest conversion. However, since 2005, the forest conversion has spiralled out of proportion with the rate of deforestation increasing from 2.0% per annum to over 6% per annum (NFA 2015). The impact of high deforestation is largely borne by the rural communities who have to compete with urban more affluent supply chains for local wood fuel, industry that uses a lot of wood fuel has also experienced increases in wood fuel and the urban poor who cannot afford the high prices of charcoal.

The high demand for charcoal has led to the harvesting of timber trees for charcoal production. The surge in demand for charcoal has also coincided with an equally high demand for timber for construction and infrastructure development. The demand for timber sparked considerable investment into commercial forestry with additional support from bilateral programmes such as the Sawlog Production Grant Scheme (SPGS). Commercial tree planting investments are considered one of the leading investment prospects by the Uganda Investment Authority. In addition to private national investors, international investors such as New Forest Company (a South African firm), Global Woods (a European firm), and Busoga Forest Company (a Ugandan firm with international shareholders) have invested heavily in commercial forest production.

Whereas the timber industry is increasingly a large commercial undertaking with organised supply and value chains and recognised actors who pay taxes, the charcoal industry has remained disorganised with little or no market structure and dominance of wholesalers and transporters in the value chain. A value chain for charcoal from northern Uganda, for instance, earns the charcoal producer the equivalent of US\$ 5 dollars per sack of charcoal while the trader would earn up to US\$ 20 dollars in the retail market in Kampala. The trader and/or transporter though has to pay for transportation from rural areas where the roads are quite poor and the likelihood of paying bribes to local authorities to ensure their charcoal reaches the final market. The efforts to create formal markets for charcoal are hampered by the concerns that the wood for charcoal production is often acquired illegally, and that the trader/transporters who are the market leaders have considerable control over the supply chain and have not been willing to adjust their current approaches (IUCN 2016).

The structure for forest governance adopted in the National Forestry and Tree Planting Act (2003) segregated forestry management into two key levels; national management for central forest reserves (CFRs) by the National Forestry Authority (NFA), and the District level management of local forest reserves by the District Forestry Officer (DFO) under the District Forest Service (DFS). In addition, the DFS was to provide support for management of forests on private land. At the time the law was promulgated it was estimated that 70% of the forested land in the country was on private land, 14% under National Parks and Wildlife Reserves under the management of the Uganda Wildlife Authority (UWA), and only 15% of the CFRs under the management of the NFA. Less than 0.5, precisely 0.03%, of the forest cover was under the DFS. Whereas previously the forest on private land was treated as private forest still, the oversight at national level always allowed faster decision making and flexibility on available resources to enhance management on private land. Under the Districts, the resources that can be mobilised from managing LFRs, and regulating timber and wood fuel movements are not adequate to support forestry management. Even when the inadequacy of local governments became clear direct efforts were undertaken to enhance oversight over private forested land. As a result in 2005, when a biomass survey was undertaken the national forest cover for private forests had already declined by nearly 10% from the previous levels and was at risk of more rapid decline. The enormous lapse in forest governance has led to considerable loss of forest on private land due to development pressures and the pressure for income while no adequate replacement of forest lost has occurred.

The loss of forest area has boosted efforts that attempt to curb the high rates of deforestation. Non-Governmental Organisations (NGO) Forest Network is working with the NFA, the National Police, and communities in areas neighbouring CFRs to send phone

message (sms) alerts to the police when they suspect encroachment and illegal harvesting of trees. NGOs such as Tree Talk and Environmental Conservation Trust (ECOTRUST), International Union for the Conservation of Nature (IUCN), Care International in Uganda (CIU), World Wide Fund for Nature (WWF) and Environmental Alert, among others have mobilised private companies to support tree planting activities as part of their corporate social responsibility (CSR). Several forest based voluntary carbon project e.g. the Trees for Global Benefits programme under the Plan Vivo Standard implemented by ECOTRUST and regulated Clean Development Mechanism (CDM) e.g. the Nile Basin Reforestation projects 1 to 5 have been established as innovations to counter deforestation. Uganda is also beginning the implementation of the Reduced Deforestation and forest Degradation (REDD+) projects.

#### **4.4 Distribution of benefits and costs associated with fisheries management**

By 2004/2005, fisheries was the second largest foreign exchange earner in the agricultural sector after coffee, with earning in excess of US\$ 180 million/year. The success of the fisheries sector was built on the liberalisation of fish trade and export and the high private investment in fish processing and export mostly to Europe (NEMA 2006). The poor information management and calculation of the maximum sustainable yield, as well as inadequate regulation led to over harvesting a burst in the sector as the capture fisheries were depleted (NaFiRRI 2011). This loss of fisheries income had considerable impact on the more than 500,000 people that were employed in the sector and the more than 1.7 million people who directly depended on fish for their livelihood (MAAIF 2004).

The government's interventions to increase fisheries regulation was to establish Beach Management Units (BMUs) where fisheries were managed based on the concepts of integrated lake management (ILM) with fishing communities providing the first line of management through BMUs lead by the fishers themselves with support of the District Local Governments and subsequently the Fisheries Directorate (then Department) at MAAIF. The fisheries sector charged local fees like a fee for fishers based on fishing effort and fish mongers. However, the technical aspects of ensuring sustainable fishing effort and proper fishing practices e.g. net size and fishing sites, i.e. avoiding breeding sites were often ignored. The concerns about poor fisheries management causing further losses in capture fisheries led to government curtailing the functions of the BMUs even though the fishing activities themselves have continued.

The loss of capture fisheries has led to the emergence and a growing use of cages for fish farming and aquaculture practice on land are increasing. Indeed, fish farming with cages has shown potential to grow rapidly. However, the regulatory agencies are only beginning to integrate the activities in their plans, particularly the component on environment management. When these cages for fish farming were initially proposed the regulatory authorities only halted action; however, the loss of capture fisheries led the industry to evolve into cage fisheries without adequate safeguards being put in place to forestall and mitigate environmental impacts.

The fisheries sub-sector characterises the limited use of strategic planning in natural resources management. Whereas strategic environmental assessment studies were conducted the information produced was not used by resource managers. The current progress too could be lost in the absence of strategic plans, their integration into plans,

adequate implementation and providing for resource mobilisation for the fisheries management.

#### **4.5 Distribution of benefits and costs associated with wetland management**

Between 1990 and 2005, Uganda experienced considerable reduction in the wetland cover from about 13% to about 9% of land cover, about 30% of all wetland cover (NFA 2009). The wetlands in Uganda provide considerable economic value for communities that rely on them for fisheries, water supply, food products, as well as harvest of raw materials such as papyrus for making mats. Recent estimates suggest that wetlands provide a national income in excess of US\$ 1 billion/year, and any loss would have substantial impact.

In urban built up areas such as Kampala city wetlands provide a buffer to flooding from Lake Victoria while also providing an enormous service of wastewater treatment. When the settlements and conversion to agriculture intensified reports of increased nutrient levels, pollution and eutrophication of Lake Victoria were reported. Areas where the wetlands had been converted experienced increased contamination of ground water systems leading to emergence of waterborne diseases of cholera and dysentery (MWE 2016).

The prospects of wetland area loss particularly in the Greater Kampala Metropolitan Area (GKMA) and the likely impacts of water resources and livelihoods in the city prompted the Directorate of Water Resources Managements (DWRM) in MWE to undertake strategic assessment, and design interventions for management of the Inner Murchison Bay (IMB) catchment of the most important catchment in the city. The benefit and opportunity from this would be a coordinated approach to catchment management for the city. However, in previous cases such plans have either been partially implemented or poorly implemented even though the plan provides considerable opportunity for managing the landscape of the city including restoration of several wetland areas, among others.

In rural areas and some peri-urban areas, paddy rice is a major agricultural produce. Indeed, the levels of paddy rice production in Uganda have been gradually increasing. The introduction of upland rice while fairly strong has not managed to usurp the popularity of paddy rice production where 58% of Uganda's rice was produced. Even though the country developed a National Rice Development Strategy (2009 – 2018), and projections in the strategy showed that 516,000 tonnes/year of rice was produced in 2013, the production was estimated to increase by 75% to 981,000 tonnes/year while the area under paddy rice was also expected to increase by 50% from 100,000ha to 150,000ha. Whereas the strategy articulated the focus on seed development, research and technology, fertiliser use, machinery, agriculture finance and post-harvest handling, among others, it was silent on sustainable management and use of wetland areas where the rice is grown.

Wetland management provides opportunities under coordinated approaches of the Ministry (MWE), and urban authorities to address shortcomings such as the acquisition of land titles in wetland areas. The inter-ministerial coordination at the government level is also being sought to address development of infrastructure such as roads, the railway



line and ports which go through wetland areas. The coordination of these efforts has always been limited under the status quo even though the benefits from the potential synergies are considerable.

The Wetlands Management Department (WMD) is also exploring the prospects of enhancing wetland management incentives through using climate adaptation funds, such as the Green Climate Fund. These opportunities may only be ideas under the status quo scenario but can be realised with improved coordination. The beneficiaries would be the communities that use wetland areas which have a public good purpose that could support climate change adaptation; for instance area where the wetland serves a common source of water and ground water prospects have been affected by climate variability. In several areas of the country, especially in the cattle corridor areas, the competition over water access in wetland areas causes competition between cattle keepers and crop farmers causing conflicts. These types of challenges can be addressed through improved property rights and enhancement of the quality and productivity of the wetlands, among others.

#### **4.6 Distribution of benefits and costs associated with water resources management**

- a) Water resources management approaches that also consider biodiversity conservation in smaller catchments and sub-catchments could be considered novel in Uganda. It was only in 2009 that the DWRM introduced catchment management of water resources. Where catchment management has been introduced the communities have trialled the opportunities associated with conservation of water catchments against previous practice and noted considerable benefits from joint decision making over the management of catchments where conservation has been a key driver. In the Rwizi catchment, the communities are conserving sections of the catchment and periodically harvest grass for mulching and feeding livestock, obtain water for domestic use, papyrus for making mats. The benefits are considerable more than the single use of the catchments for grazing livestock. Similarly in the Upper Aswa catchment in northern Uganda communities have trade-off encroachment of the rivers in the catchment to allowing the catchments to regenerate and now the water levels are higher that communities have enough water for domestic use and irrigation. Indeed, the consistency of the water flow in the river has convinced the government that a hydropower dam can be built in the area which will boost the national grid.
  - b) The system for resource mobilisation for management of water resources in the country has relied on water abstraction charges retained at DWRM and CSR support from companies. The fees collected were quite small, for instance, a hydropower dam with a potential of greater 100 Megawatts contributed UGX 20 million (\$6000). These fees are not adequate to run a catchment management organisation, and support a regional Water Management Zone (WMZ). Moreover, additional fees are needed to maintain the functioning of the river systems and wetlands and provide incentives to the communities.
  - c) DWRM has introduced the water source protection fees to all major water users in the catchments aimed at enhancing management of water resources. In some sub-catchments in Mt. Rwenzori and Mt. Elgon areas payments for watershed services schemes are being developed. However, most of the current effort is based on the backing of development agencies such as the UNDP and WWF.
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#### **4.7 Distribution of benefits and costs associated with environmental management**

Environmental management in Uganda generally occur at the national level and the District Local Governments levels. NEMA provides overall coordination for environmental management through the lead agencies; the MDAs that implement government, policies and programmes. The outright roles for NEMA on environmental management are with regard to compliance and enforcement of the Environment Impact Assessment and Audit processes, national environmental standards especially on pollution including areas of waste and chemical management, development of policies and regulations on environmental management. Biodiversity conservation activities such as coordination of access and benefit sharing, information and the NBSAP process are also mainstreamed functions and this known by the major actors.

#### **4.8 Distribution of benefits and costs associated with tourism and wildlife management**

Uganda major tourist sites, particularly major National Parks provide a unique experience of Mt. Gorillas with only Rwanda and the Democratic Republic of Congo (DRC) providing a similar experience. In Uganda's case more than half of the Gorillas are still unhabituated in the wild which provides strong conservation for the rare wildlife. There is considerable wildlife of birds and other mammals as well which makes the country a unique important site. Moreover, some of the most outstanding National Parks such as Kidepo Valley National Park and Rwenzori Mt. National Park have only a few visitors per year.

The liberalisation of the economy has for the most part meant that the hotel facilities are largely in the hands of private sector while the tourism experience with the protected areas is provided by UWA and its staff. The standards of facilities are generally below standard and this affects the quality of the service but has also been shown to affect the resource flows for key National Parks such as Bwindi Impenetrable National Park (BINP).

Several National Parks have had to allow alternative land uses given their economic importance to the country. Limestone is mined from Queen Elizabeth National Park, there are oil and gas exploration and development activities taking place in Murchison Falls National Park and more prospects for oil and gas, geothermal energy and mining activities are found in several National Parks and will likely led to exploitation of the National Parks. The costs include movement of wildlife to other areas, increased risk of poaching and loss of conservation values and potential loss of international conservation status gained.

UWA has been working with NEMA to achieve measures and instruments including biodiversity offsets, valuation of the Park resources, among others to ensure that the loss of income is mitigated. The measures also include strict waste management and EMPs, and establishment of joint environmental management plans and future plans to intensify use of strategic environment assessments (SEAs) to provide a wider perspective of impacts of the interventions undertaken.

The agencies engaged in tourism and wildlife management, principally Uganda Wildlife Education Centre (UWEC) and UWA have strong revenue mobilisation through non-tariff revenues (NTR). The agencies have a semi-autonomous nature which allows for re-

investment of their resources towards wildlife management which increases the quality of the wildlife ecosystems and services.

There are strong revenue sharing arrangements between UWA and communities. Communities in sub-counties neighbouring the National Parks receive a share of gate collections from UWA and this revenue is an incentive for their contribution towards maintaining the integrity of boundaries of the national park and their overall contribution to wildlife management. Their share is 40% of all gate collections.

Other instruments with benefit from wildlife include access communities have to obtain non-wood products include firewood, medicinal plants in some sections of the National Parks. UWA also co-implements with communities projects for carbon sequestration; for example the Forests Absorbing Carbon dioxide Emissions (FACE) Foundation project in Kibale National Park where in addition to reforestation undertaken in the National Park, communities' in the neighbouring areas also planted trees in the buffer areas and per took of the revenues generated from the voluntary market.

#### **4.9 Prospects for consolidating benefits and minimising costs of the biodiversity investment scenario**

The distribution of benefit of biodiversity conservation are summarised in Table 8. The distribution of costs and benefits focused on agricultural ecosystems and agriculture species diversity, forests, wetland and water resources ecosystems and environmental management and tourism and wildlife management functions.

**Table 12: Prospects for enhancing biodiversity management distribution benefits and minimising costs**

Losers/type of loss	Process of losing	Beneficiaries	Process of benefiting	To minimise costs and enhance benefits
<b>Agriculture</b>				
(i) Plant genetic resources (for research and development)	Adoption of monocultures; Reduced lines of crop seed promoted on subsistence and commercial farms; Poor facilities for maintaining germ plasm and genetic resources; Little funds for research on genetic diversity	Commercial seed traders and distributors both national and international  Commercial farmers and produce value chains	Large market segments including smallholders and commercial farmers inclusive of men and women  Cheaper raw materials.	Public investment in genetic resources conservation and management programmes, research and development  Provide adequate fees on seed (seed cess) and technology development that should be re-invested
(ii) Farmers due to low production, loss of production and production potential	Poor quality agro-ecosystems lead to low production. Poor implementation of production enhancement programmes Increased pressure to encroach or convert other ecosystems	The poor implementers of government programmes	Losses through errors of mismanagement and misuse of public resources Potential for elite capture	Improved governance of agricultural programmes Strategic planning and integration of environmental and biodiversity management elements Integration of biodiversity conservation into extension programmes
(iii) Natural controls for pests and diseases, pollinators in the fields	Increased incidence of pests and diseases that were already naturally controlled. Increased use of external inputs of pesticides to control diseases.	Pesticide manufacturers, importers and distributors	When the natural resistance of diseases decreases, external inputs will be needed for control.	Encouraging agro-biodiversity within the farming systems. Maintaining areas under traditional agro-ecosystems to protect local biodiversity. Enhance community gene banks.
<b>Forests</b>				
(i) Inefficient conversion of wood for charcoal	Poor charcoal kilns Deforestation	Domestic homes in urban areas	Cheap fuel for cooking	Enhance efficiency of kiln Scale up efficient of kilns

(ii) Unsustainable harvesting of wood for domestic and industrial energy	Deforestation for wood fuel Poor market organisation – value of degradation omitted	Industry Homes	Cheap fuel for industrial energy Domestic use	Scale-up sustainable forest and wood fuel production Establish market structure and governance for wood fuel products Prices for wood fuel to reflect value of natural resource and using charges for forest restoration
(iii) The poor, particularly women often cannot participate in commercial forestry	Elite capture from commercial forestry Property rights weaker for women	Affluent men who can own land	Access to knowledge and resources to take advantage of opportunities	Programmes to enhance equity for women and the poor e.g. micro-finance and community forestry enhanced
(iv) Loss of non-wood forest products e.g. pollinators, honey, food items, medicinal plants, water sources	Where many community members loose access to resources they were traditionally attached to	Encroachers and those who convert forests for other land uses	Deforestation and/or forest conversion	Complete forest resource planning Integrating components of access and benefit sharing Effective reduction of forest conversion and/or deforestation
(v) Loss of GHG sequestered	The loss of carbon capture on the woody biomass Signs of climate variation such as temperature increase, increased pests and diseases, impacts on ground water table, flood control, wind breaks, etc.	Encroachers and private forest owners who harvest or convert land use	Harvesting of wood and non-wood products and selling and/or using the products	Enhance oversight over forests on private land. Provide better forestry management plans, and incentives for forest management on private land
(vi) Collaborative forest management (CFM)	Communities sign an agreement to support management of the CFR through planting trees in buffer zones and benefit from the resultant carbon emissions reductions revenues, can place beehives and obtain honey and/or wait for harvest time and sell timber from mature trees.	Communities The National Forestry Authority	Non-timber forest products Carbon revenues Timber	Enhance use of CFM and increase cooperation between NFA and communities on access and benefit sharing Produce proper guides and share the information necessary.

<p>(vii) Community forest reserves</p>	<p>Community forest reserves were created to provide for communities that have been displaced for development or environmental purposes with access to forest ecosystem services</p>	<p>Communities The National Forestry Authority and/ or Forestry Sector Support Department (FSSD)</p>	<p>Non-timber forest products Timber</p>	<p>Enhance use of community forest reserves to allow communities' maintain access to forest ecosystem services. Produce proper guides and share the information necessary.</p>
<p><b>Fisheries</b></p>				
<p>(i) Over harvesting of capture fisheries, poor governance of fisheries</p>	<p>Excessive and unsustainable effort on capture fisheries</p>	<p>Illegal fishers and non-compliance resource managers</p>	<p>Inadequate oversight over fishing communities</p>	<p>Enhance governance oversight over fishing communities and resource managers. A clear revenue mobilisation structure support by regulations and legislation Enhance human and technical capacity Clear data collection and databases Increased research in capture fisheries and environmental and social impacts</p>
<p>(ii) Illegal fishing</p>	<p>Capture of immature fish, fishing in breeding sites</p>	<p>Illegal fishers</p>	<p>Inadequate oversight over fishing communities Illegally retaining levies collected or not accounting for levies collect. Unclear system on how to re-invest fisheries levies</p>	
<p>(iii) Lack of clarity of fisheries levies, and the misuse at local level</p>	<p>Local levies collected with limited oversight. Lack of comprehensive guidance on fisheries fees.</p>	<p>Officers who collect the fisheries levies and their supervisors</p>		
<p>(iv) Environmental compliance in fisheries management</p>	<p>Inadequate research and development of standards for fish farming</p>	<p>Current investors in cage fish farming and aquaculture</p>	<p>Filling the fish demand gap due to loss capture fish supply</p>	
<p><b>Wetlands</b></p>				



(i) Private acquisition of plots	Settlements construction and other urban built up areas	Urban residents	Illegal settlements, and illegal acquisition of plots	Complete valuation of wetlands and use of appropriate instruments such as offsets and banking schemes, as well as seeking full compensation.
(ii) Infrastructure use	Government sanctioned conversion for roads and other infrastructure	Government, the public	Where wetlands provide cheapest available land	Creation of clear use rights for wetlands include conservation based on spatial understanding of value of resource
(iii) Wetland conversion for agricultural production	Conversion of agriculture in peri-urban areas	Private individuals, firms and government	Acquire exclusive access by legal and illegal means	
(iv) Abuse of wetland user permits and/or presence of wetland on private land	Demarcation of wetlands and private use even where public use is highly significant	Private individuals, and firms	Reducing public access to the resource	
<b>Water resources</b>				
(i) Illegal diversions and abstraction of water	Abuse of rights of access to water catchments	Private individuals, and firms	Reducing public access to the resource	
(ii) Collection of surface effluent from terrestrial activity in homes, industry etc.	Excess wastewater effluent reentering the key water systems.	Persons or firms that discharge waste into the water systems.	Companies that illegally discharge effluent Non-point source pollution	Clear water resource management plan with a clear budget, plans by catchments, sub-catchment and water management zones Comprehensive enforcement and compliance to effluent discharge regulations Monitoring and management actions for non-point source pollution
(iii) Inadequate compensation for water use for utility water supply and hydropower production	High water abstraction for utilities and electricity production. Absence of resources to comprehensively conduct water catchment management	Lack of instruments linking farmers upstream activity with downstream land use.	Payment for only abstraction fees Low or no participation in catchment management	
(iv) Lack of resources for water management purposes	Absence of clear system for resource mobilisation in the water catchments and sub-catchments, except members' fees and credit.	Utility producers for water supply Hydro-electric power producers.	The private and public firms that pay low charges for water	

<b>Environmental management</b>	
(i) Pollution from industry into water systems	<p>Pollution of fisheries, especially the breeding sites, Excessive chemical contamination of water requiring high treatment costs</p> <p>Industry</p> <p>Avoided costs of compliance to pollution</p> <p>Additional instruments, especially economic instruments to reduce level of effort required to monitor compliance and ensure adequate penalties for non-compliance</p>
(ii) Added cost of enforcement of environmental management plans and auditing of private firms	<p>Regulators incur additional costs of looking for additional mitigation and enforcement measures to reduce extent of environmental damage</p> <p>Private firms and project developers who are non-compliance</p> <p>Reduced effort of mitigation and compliance measures</p> <p>Clarity of environmental management plans, and provide early checks of compliance and strong penalties for none compliance</p>
(iii) Losses through multiplicity and repetitiveness of similar undertaking e.g. wetland management actions	<p>The inadequate coordination functions</p> <p>Loss of scarce resources from uncoordinated activities</p> <p>Loss of ecosystems to infrastructure development in presence of alternatives</p> <p>Agencies implementing multiple activities</p> <p>Additional fees to undertake multiple activities</p> <p>Maintaining designated budgets</p> <p>Budget synchronising at the Sector Working Group level and at the national Ministry of Finance level.</p>
<b>Tourism and wildlife</b>	
(i) Encroachment and poaching in the national parks and wildlife reserves	<p>Loss of wildlife to illegal access to national parks and harvesting products for sale</p> <p>Poachers and the illegal wildlife product markets</p> <p>Illegal markets are usually high value markets</p> <p>Increased intelligence and surveillance within the parks</p> <p>Support of international efforts to curtail trade in illegal productions (CITES)</p>
(ii) Inadequate facilities and low income in some tourism areas of National Parks and wildlife reserves	<p>Loss of tourism revenues associated with inability to offer the adequate and appropriate tourism services</p> <p>None</p> <p>Wildlife and tourism agencies in the country lose revenue while tourism miss an experience</p> <p>Increased market intelligence and developing of feasible and viable packages and seeking increased sustainable investment opportunities</p>

## 5. SUMMARY OF ISSUES

### 5.1 Summary of issues related to policies, practices, and markets

#### ***Biodiversity status and trends***

##### a) *Ecosystem diversity*

Generally biodiversity indicators point to a declining ecosystem diversity for forests and wetlands. A shift from traditional to commercial agriculture and increasing degradation of grasslands and bushlands articulated in this report indicates the biodiversity in these ecosystems is also declining.

The declining fisheries productivity especially of commercial fishes and ongoing efforts, by NaFIRRI, to enrich the smaller water bodies so that they can be more productive suggests that the ecosystem quality and diversity in these fisheries is also declining.

##### b) *Species diversity*

After decades of decline in the 1960s to 1990s, there are indications that the species diversity for mammals has stopped dropping. There are still threats of wildlife trade and encroachment on protected areas which pose important risks.

The bird population seems to be steady and gradually increasing. However, the species diversity is strong in protected areas e.g. QENP and Kidepo National Park as well as on private land. The diversity on private land is most at risk due to very high deforestation rates while industrial incursions into protected areas also pose threats for bird species found there.

Medicinal plant diversity is declining as more land is converted into agriculture. There are dangers that given the limited level of documentation on important medicinal plants current disappearances are not well appreciated or understood.

Pollinator populations are still fairly strong in the country. However, the risk to these populations is strong due to the land use change from natural systems into converted agricultural systems.

#### *Key sectors*

Five key sectors were selected based on their priority in the NBSAP and in the review of significance to biodiversity conservation and biodiversity finance. The sectors are: Water and Environment; Agriculture; Tourism, Trade and Industry; Energy and Mineral Development; and Works and Transport. The sectors proposed as cross cutting were: Finance; Gender, Labour and Social Development, Local Government; and Lands, Housing and Urban Development.

## 5.2 Summary of issues for Institutional review

### *Biodiversity conservation and finance actors*

The biodiversity finance actors in government are defined largely by the planning, budgeting and expenditure review cycle. At the local government level, the planning committees for the different departments, the Technical Planning Committee of the local governments and the Sub-county, town, municipal, District and/or City councils are the key actors. When the budget has been approved and previous expenditure reviews the new budget, Budget Framework Paper (BFP) and revised Medium Term Expenditure Framework (MTEF) are passed on to the Ministry of Finance (MFPED) for further action.

At the central government level, the actors in finance planning and expenditure review and the Ministries, Departments and Agencies (MDA). The sub-sector budgets are brought to the line ministries for each sub-sector and sector working groups for review and reprioritisation and when this process has passed the sector BFP can be passed and submitted to cabinet and subsequently the budget and review of previous expenditure presented to parliament, reviewed and passed for the next financial year.

In the interim periods, stakeholders in the priority sectors are engaged in mobilising resources, expenditure and reporting on finances for biodiversity finance for the current and future financial year.

### *Finance mechanisms, legislation, institutions, and biodiversity conservation focus or impact*

#### *Environmental taxes*

Environmental taxes represent a growing opportunity for integrating biodiversity finance in fiscal planning and allocations in a manner that influences the macroeconomic management plans of government and especially the incentives of the private sector and households to improve their environmental management.

#### *Environmental compliance charges and fees*

Environmental charges are a crucial source of finance for the National Environment Management Authority, Directorate of Water Resources Management and other regulatory agencies whose current legislation does not provide for commercial activities.

#### *Local governance based charges and mechanisms*

Different finance mechanisms are being tried with varied success, some approaches which were thought to contribute to biodiversity conservation financing such as fees and charges under Beach Management Units (BMUs), and Forestry levies for the District Forest Service (DFS) have been abused or poorly enforced leading to biodiversity losses instead.

#### *Resource rents and royalties*

Resource rents and royalties have not been strongly aligned with biodiversity conservation as the Government of Uganda does not implement an earmarking policy. It is likely that these charges are below the levels that a full cost and benefit accounting

would support. However, biodiversity finance can be achieved if the benefits are clearly articulated.

### *International funds*

Several NGOs are piloting approaches for involving entire communities such as the community environment conservation fund (CECF) under IUCN and the landscape restoration actions under WWF. A lot of independent international funds are channelled through NGOs and CSOs.

### *Non-Tax Revenues (NTR)*

NTR is a main revenue source for agencies such as UWA, NFA, and UWEC that are involved in protected area and wildlife management activities. Increasingly many other MDAs are generating NTR.

### *Revenue, benefit sharing and access to resources*

A key component of financing of protected areas in Uganda is through access and benefit sharing including revenue sharing with communities surrounding the protected areas. The benefit sharing is also extended to indigenous communities through ecotourism, revenue sharing and access to ecosystems services that can be accessed sustainably with a clear plan.

### *Conservation funds*

Conservation funds have existed in Uganda for many years with some success such as the Bwindi Mgahinga Conservation Trust (BMCT). However, their growth slowed down in the late 1990s and 2000s due to the low development partner support and other government priorities. Small funds for climate change mitigation and adaptation and endowment funds by NGOs and CSOs provide some limited finance. However, there are efforts to create a Biodiversity Conservation Fund under auspices of USAID and several other public, private and CSO stakeholders with technical support from the Wildlife Conservation Society (WCS).

### *Payments for ecosystem services*

There is considerable scepticism among key actors towards instruments such as payments for ecosystem services. However, PES schemes are growing and their role has been articulated in the revised environment legislation for Uganda

### *Renewable energy finance windows*

There is considerable innovation towards public-private partners in the renewable energy finance. Many of the schemes proposed for renewable energy are self-sustaining and only need strong enhancement of the role for biodiversity conservation.

There is a need to switch some of this focus to restoration and increasing the biomass base as well.

### *Subsidy Reform*

The main biodiversity harmful subsidies are found in the agriculture sector and land allocation for public infrastructure – building in fragile ecosystems with high biodiversity such as wetlands and water catchments.

### *Central government finance*

Public finance remains a key source of biodiversity conservation finance. This component can be strengthened further through improved targeting of biodiversity conservation and improving efficiency of using resources.

### *Overseas Development Assistance (ODA)*

Usually directed through public finance mechanisms, ODA is the second largest source of finance for biodiversity conservation. The development partners include particularly the European Union, individual European states, the African Development Bank and the World Bank as well as USAID.

### *Private finance schemes*

There are governance concerns on whether private financing through District Local Governments and Central Government institutions can be achieved with the stringent financial oversight. Therefore, many private sector and international funds are still channelled directly to NGOs and CSOs.

### *Capacities and capacity needs*

#### *Strategic planning capacities*

- Sectors that are core to the NBSAP process have had the opportunity of undertaking strategic planning for biodiversity conservation. However, the Works and Transport and sector which has had a minimal role in the NBSAPs process has much less integration. Even within core sectors like Agriculture there are strong components where prioritisation of biodiversity is weak. *Across all sectors the description of scenarios and macroeconomic contribution of biodiversity conservation within those sector is missing* and therefore articulating the biodiversity conservation finance case could be affected.

#### *Financial management and reporting capacities*

- There has been a strong effort by the central government to improve financial reporting. This is reflected on the financial reporting of line ministries. Nonetheless, there are strong inconsistencies mostly within the sectors. Therefore, whereas effort is needed it is only aimed at improving existing capacities.

#### *Communication and persuasion capacities*

- The communication and persuasion capacities are also existent; however, there is a strong need to improve the capacity for persuasion. This capacity will build on the capacities in strategic planning and in the level of priority given to biodiversity. The planning components of many sectors need to be significantly enhanced.



## 6. RECOMMENDATIONS

### 6.1 Recommendations from policy review

1. Strategic technical planning for several decades for multiple sectors is needed to balance demographic factors, with technology adoption, industrial growth envisaged, and contribution of biodiversity conservation and finance
2. The contribution climate finance in biodiversity conservation should be strengthened further.
3. Strengthen biodiversity conservation in environmental compliance actions for infrastructure development projects
4. Integrate biodiversity conservation and management in Land use planning
5. Streamlining the synergies and interventions between biomass generating sectors such as forestry, agriculture, wetlands and protected areas with the energy sector will help bridge the different perspectives. The biomass and other renewable energy strategies should be overarching with clear biodiversity conservation and macroeconomic implications and long-term scenarios.
6. Future agriculture sector strategies should revisit the spirit of the Plan for Modernization of Agriculture (PMA) and build a comprehensive programme. Biodiversity conservation finance can contribute to supporting unfunded priorities of environmental management in the agricultural sector.
7. The duplication of roles among agencies within government MDAs not only spreads resources thin but also reduces overall impact on key areas such as biodiversity conservation. There should be strong efforts to find synergies on one hand and also improve the supervisory allocation of key components such as PGRF so that they can serve their beneficiaries better.

### 6.2 Recommendations from Institutional review

1. Starting with existing institutional arrangements, legislation, financing mechanisms and successful pilot schemes there is a good starting base to achieve biodiversity finance in Uganda to a level set out in the Aichi targets. But a strong biodiversity conservation finance strategy with considerable multi-stakeholder consultation, participation and commitments is needed.
  2. There is a need to strengthen compliance as a starting point for sectors that are not directly linked to biodiversity conservation finance. The next step is to improve the articulation of biodiversity finance through better analysis and synthesis of messages and through regular engagement, especially on the benefits to be gained.
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3. Realising improved performance of weak financing mechanisms and engagement of the private sector and local landscape / catchment stakeholders will improve sustainability of the proposed financing arrangements.
4. There is a strong need to improve the design of biodiversity related revenue mobilisation instruments at the local government level. The design should cater for capacities and governance mechanisms to ensure success of these instruments.



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