THE REPUBLIC OF UGANDA

NATIONAL BIODIVERSITY FINANCE PLAN

2019/20 - 2027/28

MAY 2019

This project is co-funded by the European Union

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

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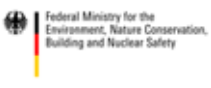

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Editors in Chief	
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David Meyers	Former - Senior Technical Advisor, Global BIOFIN Project
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Francis Mwaura	BIOFIN - Private Finance /Business National Expert
Fred Roland Muwanika	BIOFIN - Private Finance /Business National Expert

FOREWORD

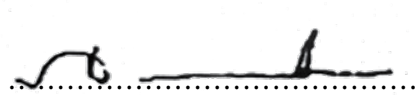
The world is facing unprecedented loss of biodiversity. As many as 70 percent of the world's known species are at risk of extinction. These trends have profound implications for human wellbeing particularly for the world's poorest communities who depend on biodiversity and ecosystem services for the basic necessities of life. In Uganda, the loss of biodiversity is observed in the high loss of forest cover, degradation of wetland resources, extinction of species and pollution of aquatic ecosystems especially streams, rivers and lakes.

The Government of Uganda, basing on its commitment as a Party to the Convention on Biological Diversity (CBD) supported by the United Nations Development Programme (UNDP) participated in the Global Biodiversity Finance Initiative (BIOFIN) project. The objective of the project is to assist developing countries in identifying, accessing, combining and sequencing sources of biodiversity funding to meet their specific needs hence closing the global financing gaps for conservation and sustainable use of biological diversity.

BIOFIN is a UNDP-managed global partnership that supports countries to enhance their financial management for biodiversity and ecosystems. Whereas BIOFIN was developed in response to resource mobilisation challenges identified by the 10th Conference of the Parties (COP-10) of the CBD, in Uganda financial limitations were highlighted in both the first and second National Biodiversity Strategy and Action Plan (NBSAP I and NBSAP II).

The National Biodiversity Finance Plan is the ultimate result of the BIOFIN project in Uganda. It was developed through wide stakeholder consultation. The Plan is the final product of a three-year process that also comprised the Biodiversity Policy and Institutional Review, the Biodiversity Expenditure Review and the biodiversity Finance Needs Assessment. The Plan streamlines and articulates the national priorities for financial resource mobilisation for biodiversity management for period 2019/20 up to 2027/28.

Uganda's National Biodiversity Finance Plan comprises eight finance solutions that capture a breadth of innovation and practicability. All the finance solutions are focused on increasing investment into biodiversity including for restoration and protection of biodiversity, which a core element of NBSAPII, the National Development Plan II and Vision 2040. The Plan has been developed to support Ministry of Finance, Planning and Economic Development in planning, budgeting and allocation of financial resources for biodiversity conservation and management for the sustainable national development and human wellbeing. I call up on all stakeholders to use this Plan for mobilizing additional resources for biodiversity management in Uganda.



Hon. Sam Cheptoris
MINISTER FOR WATER AND ENVIRONMENT

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The National Environment Management Authority (NEMA), on behalf of the Government of Uganda (GoU), the United Nations Development Programme (UNDP) and the Biodiversity Finance Initiative (BIOFIN) extend gratitude to all stakeholders who have made contribution towards the development and completion of the National Biodiversity Finance Plan (NBFP). The NBFP was developed in a participatory BIOFIN process involving private sector, civil society, Ministries, Agencies and Local Governments (MALGs). The following institutions are specifically acknowledged:

Minister of Finance, Planning and Economic Development
Ministry of Water and Environment
Ministry of Tourism, Wildlife and Antiquities
Ministry of Agriculture, Animal Industry and Fisheries -Department of Fisheries
Mineral of Energy and Mineral Development
Ministry of Works and Transport
Ministry of Local Government
Ministry of Gender, Labour and Social Development
National Planning Authority
Uganda National Council for Science and Technology
National Agricultural Research Organization and the affiliate Research Institutes
National Forestry Authority
Uganda Wildlife Authority/ Bwindi Impenetrable National Park
National Animal Genetic Resources Centre & Data Bank
Uganda Export Promotion Board
Uganda Bureau of Statistics
Makerere University College of Agriculture & Environmental Sciences
Makerere University College of Natural Sciences
District Local of Governments
Technical Committee on Biodiversity Conservation
Wildlife Conservation Society
Uganda Wildlife Education Centre
Rhino Fund Uganda
Bujagali Hydro Power Station
Isimba Hydro Power Station
Nature Uganda
International Union for the Conservation of Nature (IUCN)
World Wide Fund (WWF)
Kayonza Tea Factory (in Kanungu District)
Total E & P Uganda

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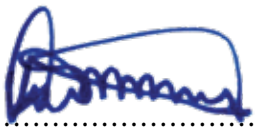

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Dr. Tom O. Okurut
EXECUTIVE DIRECTOR
NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

ACRONYMS

AfDB	African Development Bank
BER	Biodiversity Expenditure Review
BFP	Biodiversity Finance Plan
BMCT	Bwindi Mgahinga Conservation Trust
CECF	Community Environment Conservation Fund
DWRM	Directorate of Water Resources Management
ECOTRUST	Environmental Conservation Trust (Uganda)
FAO	Food and Agriculture Organisation of the United Nations
FNA	Finance Needs Assessment
GEF	Global Environment Facility
IFOAM	International Federation of Organic Agriculture Movement
IPLCs	Indigenous Peoples and Local Communities
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resource Management
LGFC	Local Government Finance Commission
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MALGs	Ministries Agencies Local Governments
MEMD	Ministry of Energy and Mineral Development
MFPED	Ministry of Finance Planning and Economic Development
MoJCA	Ministry of Justice and Constitutional Affairs
MoLG	Ministry of Local Government
MTWA	Ministry of Tourism Wildlife and Antiquities
MWE	Ministry of Water and Environment
NBSAP	National Biodiversity Strategy and Action Plan
NCA	National Capital Account
NCCP	National Climate Change Policy
NDC	Nationally Determined Contributions
NDP	National Development Plan
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NOGAMU	National Organic Agriculture Movement of Uganda
NPA	National Planning Authority
NWSC	National Water and Sewerage Corporation
PIR	Policy and Institutional Review
PSFU	Private Sector Foundation Uganda
SDGs	Sustainable Development Goals
SNA	Systems of National Accounts
UBTF	Uganda Biodiversity Trust Fund
UGGDS	Uganda Green Growth Development Strategy
UNDP	United Nations Development Programme
UNEP	United Nations Environnent Programme/ UN Environnent
USAID	United States Agency for International Development
UWA	Uganda Wildlife Authority
UWCEC	Uganda Wildlife Conservation Education Centre
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

As the world faces unprecedented loss of biodiversity, Uganda too is losing its biodiversity and ecosystems at a very high rate. Since 1990, Uganda has lost over 62.5% of its forest cover and the functional wetland area halved from 15.6% to 8% of land cover due to degradation. The pollution pressure from effluent discharges on the main lake system, the Lake Victoria, in Kampala and Jinja cities has constrained abstraction of water for domestic and industrial use, and reduced fishing and tourism activities in the main bays. Loss of forest, farmland, wetlands and freshwater habitat has led to the decline in species abundance which in turn continues to reduce the ecosystem services including flood control, effluent treatment and pollution regulation, pollinator services for crops, and provisioning of wood, and foods, among others.

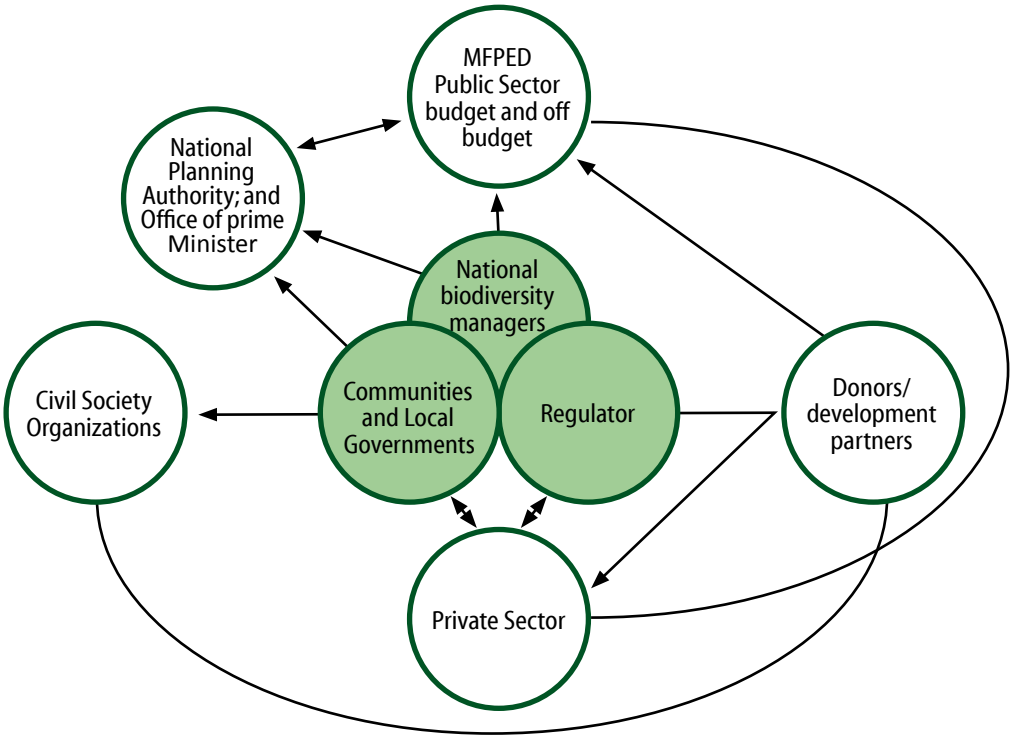
Uganda's second National Biodiversity Strategy and Action Plan (NBSAP II) concluded that inadequate financial resources for implementing planned activities was one of the key barriers limiting realisation of the country' biodiversity targets. The Government set about addressing the financial barrier by developing guidelines and actions for financing biodiversity conservation in Uganda. In 2015, the Government embarked on a definitive process of developing a financial resource mobilisation plan when it joined the Biodiversity Finance Initiative (BIOFIN). BIOFIN was developed in response to the 10th Conference of the Parties (COP-10) of the Convention on Biological Diversity (CBD) which identified the need for better information on current expenditures and financing needs, and for a comprehensive methodology to develop resource mobilization strategies. At country level, BIOFIN brought together a core group of national stakeholders from the ministries, water for environment (MWE); Tourism, Wildlife and Antiquities (MTWA); Energy and Mineral Development (MEMD); Agriculture, Animal Industry and Fisheries (MAAIF); Local Government (MoLG); and Gender, Labour and Social Development (MoGLSD), the private sector (Private Sector Foundation Uganda-PSFU), and civil society (including the International Union for the Conservation of Nature – IUCN, Environment Conservation Trust (ECOTRUST) Uganda, and Nature Uganda) to implement a road map that led to this National Biodiversity Finance Plan. Uganda's BIOFIN project produced four outputs, the Biodiversity Policy and Institutional Review (PIR), the Biodiversity Expenditure Review (BER), the Biodiversity Finance Needs Assessment (FNA), and the National Biodiversity Finance Plan (NBFP).

The ***Vision*** for Uganda's NBFP is **"sustainable and innovative financing for biodiversity conservation and management attained by 2027/28".** The ***mission*** of the NBFP is **"to mobilise adequate additional financial resources to meet the biodiversity funding gap as well as ensure that funds are used efficiently and effectively to address the biodiversity and ecosystem challenges in biodiversity and ecosystem conservation and management."**

The **goal** of the plan is to achieve "**optimal and sustainable financing for biodiversity conservation and management attained by 2027/28."** Three objectives complement the goal of the NBFP. The objectives are: (i) to develop and implement a biodiversity and ecosystem index and payments for ecosystem services; (ii) enhance the use of economic instruments as incentives for biodiversity conservation and management; and (iii) scale up innovative biodiversity management and conservation actions that enhance livelihoods and increase national revenue. The eight finance solutions are:

1. A national biodiversity and ecosystem index and biodiversity fiscal transfers.
2. A national programme on payments for ecosystem services.
3. Scaling up bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model.
4. Upgrading the ecotourism value chain for Ramsar sites and Kampala city and Mbarara municipality.
5. Upgrading the value chain for organic agriculture, natural ingredient, cosmetics and pharmaceuticals.
6. Rationalise and implement revised charge systems for biodiversity and ecosystem conservation and management.
7. A financing model for biodiversity conservation for central forest reserves.
8. Standardize and regulate implementation of biodiversity offsets.

In the governance framework for Uganda's NBFP the Ministry of Finance Planning and Economic Development (MFPED) provides overall leadership. At the core of the framework is an overlap functions and respective leadership on implementation of restoration and maintenance actions, generation of financial resources and maintenance of a National Biodiversity Mitigation Banking system between NEMA, Ministries, Agencies and Local Governments (MALGs).



Governance framework for the NBFP

Resource mobilisation strategy for implementing the Plan proposes four main sources of financing, support from donors and government through grants and/or budgetary and non-budget support, own revenue mobilised from non-tax revenues, revenues mobilised for biodiversity conservation and stored in the different biodiversity funds, particularly the National Biodiversity Mitigation Banking System that will be integrated as window of the National Environment Fund (NEF) in NEMA. Private sector will provide finance through investments under the innovative public-private-producer partnership (4Ps) (IFAD/ MAAIF 2017). The 4 Ps innovations emerged because many times, the communities continue to have a stewardship and ecosystem services access to biodiversity. There is a risk that a public-private partnership may push local stewards out of the biodiversity and ecosystems as they are not part of the memorandums of understanding. Under 4 Ps the communities are part and parcel of the sustainable development and use of biodiversity to mobilise additional financing for biodiversity management.

Summarised financial resource mobilisation strategy for the NBFP

Finance solutions	Phases of implementation	Financial requirement ($ million)	Resource mobilization strategy	Source of funds
1. A national biodiversity and ecosystem index and biodiversity fiscal transfers.	Finance solution development	0.30	Donors and non-tax revenues of NEMA, MWE and local revenue for local governments	Grants and own revenue
	Piloting solution	0.24	Biodiversity Fiscal Transfers and Development partners	Grants - international biodiversity conservation funds
	Scaling up solution, 6 years	19.93	Funds from the National Biodiversity Mitigation Banking System, and Biodiversity Fiscal Transfers	Own revenue and grants

Finance solutions	Phases of implementation		Financial requirement ($ million)	Resource mobilization strategy	Source of funds
2. A national programme on payments for ecosystem services	Finance solution development		0.18	Donors and non-tax revenues of NEMA. Contributions of CSOs.	Grants and own revenue
	Piloting solution		0.24	Non-tax revenues of NEMA, NFA and MWE. Contributions of CSOs.	Own revenue and CSO support
	Scaling up solution		13.52	Funds generated from PES kept in a PES Fund window in the National Biodiversity Mitigation Banking System of the National Environment Fund	Own revenue, national PES market, international PES markets
3. Scaling up bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model	Finance solution development		0.26	Biodiversity Fiscal Transfers and development partners	Budget support
	Piloting solution		0.16	Biodiversity Fiscal Transfers and development partners	Budget support
	Scaling up solution		16.83	Biodiversity Fiscal Transfers and National Biodiversity Mitigation Banking System	Budget support. public biodiversity funds
4. Upgrading the ecotourism value chain for Ramsar sites and Kampala city and Mbarara municipality	Aggregate cost (8 years) > 500 ha for economies of scale, per hectare		0.045	Public-private producer partnership. The producers are the communities who will be part of the action plans. Public funds will be mobilized from the National Biodiversity Mitigation Banking System	Private sector investment Public sector investment (own revenue) and community co-funding
5. Upgrading the value chain for organic agriculture, natural ingredient, cosmetics and pharmaceuticals	Shea nut	Scenario 1	11.27	Biodiversity Fiscal Transfers and development partners Public private producer partnership	Budget support and off budget support Private sector investment, biodiversity friendly low cost credit
		Scenario 2	34.81		
		Scenario 3	13.00		
	Organic agriculture	One-time subsidy	19.42	Biodiversity Fiscal Transfers and development partners, private sector investment	
6. Rationalise and implement revised charge systems for biodiversity and ecosystem conservation and management	Finance solution development		0.55	Biodiversity Fiscal Transfers	Budget support
	Piloting solution		2.19	Non-tax revenues of NEMA, MWE and local revenue for local governments	Revenue generated recycled- National Environment Fund, and local government funds
	Scaling up solution		11.23		
7. A financing model for biodiversity conservation for central forest reserves	Finance solution development (per hectare)		0.02	Biodiversity Fiscal Transfers, National Biodiversity Mitigation Banking System, donors	Budget support National Environment Fund
	Scaling up (7 years) (per hectare)		0.03	Funds from the National Biodiversity Mitigation Banking System	Revenue generated recycled
8. Standardize and regulate implementation of biodiversity offsets	Finance solution development		0.86	Biodiversity Fiscal Transfers, donors	Budget and off-budget support
	Scaling up solution, 8 years		2.00	National Biodiversity Mitigation Banking System	Biodiversity Funds

The National Biodiversity Finance Plan will be implemented over the period 2019/20 to 2027/28. The eight finance solutions will be implemented concurrently. The development phase of the finance solution is expected to take one to two years, while one to two-year pilot phase is envisaged. The remaining part of the timeline between six to eight years will be for scaling up the finance solution.

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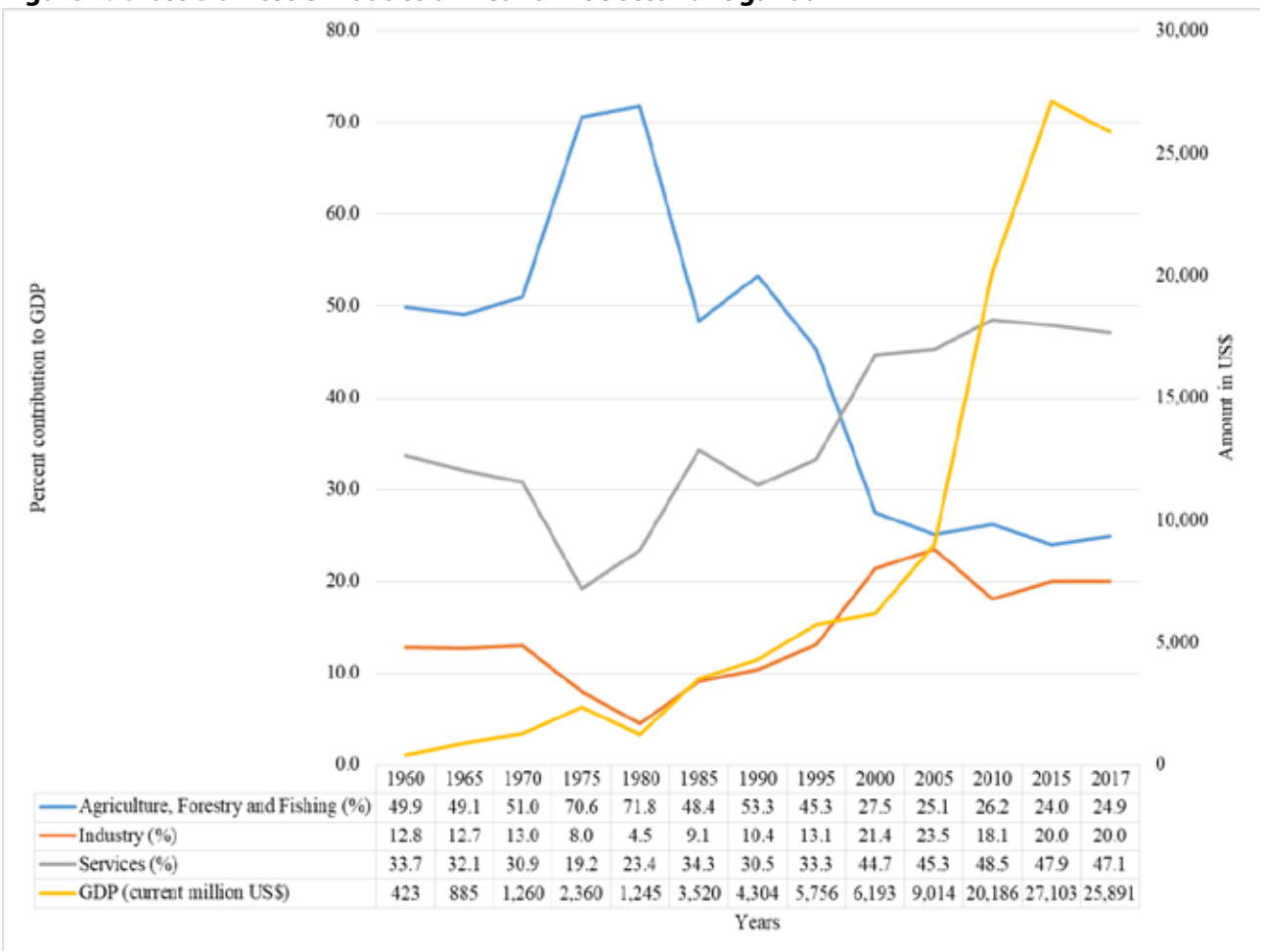
1.1 Importance of biodiversity in Uganda

Uganda's economy is divided into three overarching sectors: agriculture, forestry and fishing; industry; and services. Historically, Agriculture, Forestry and Fishing sector, which are based on the use of biodiversity resources and ecosystems services contributed between 40 and 72% of the national GDP (Figure 1). Since 1995, the services sector over took the agriculture, forestry and fishing sector, and the industry sector GDP contribution also increased (World Bank 2018).

Figure 1: Gross Domestic Production Economic Sector of Uganda



	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2017
Agriculture, Forestry and Fishing (%)	49.9	49.1	51.0	70.6	71.8	48.4	53.3	45.3	27.5	25.1	26.2	24.0	24.9
Industry (%)	12.8	12.7	13.0	8.0	4.5	9.1	10.4	13.1	21.4	23.5	18.1	20.0	20.0
Services (%)	33.7	32.1	30.9	19.2	23.4	34.3	30.5	33.3	44.7	45.3	48.5	47.9	47.1
GDP (current million US$)	423	885	1,260	2,360	1,245	3,520	4,304	5,756	6,193	9,014	20,186	27,103	25,891

Source: World Bank (2018)

Whereas, biodiversity and ecosystem (agriculture, forestry and fishing) continue to be the main stay of the economy, they have been pushed to the background, due to evolution and presentation of the economy. The security of the services of industrial sectors is built on the quality and quantity of biodiversity and ecosystem services. For instance, Uganda's service sector covers whole sale and retail trade, hotels and tourism activities. Similar the industry sector relies on hydroelectric power for over 90% of electricity produced, water supply, and agriculture, forestry and fisheries raw materials. The degradation of biodiversity and ecosystem services will lead to severe impacts on the national economy, and subsistence livelihoods.

Uganda's nature based tourism contributes about 7.9% national GDP (WTTC 2017) and synthesis conducted based on recent assessments by NEMA (2011) and Kakuru et al (2013) show that forestry resources and wetland resources, respectively would have contributed 8.7% and 19% of the reported GDP in 2010 and 2013, respectively[1].

1 Forestry resources contributed about US$ 1.3 billion/year or 8.7% in 2010 while wetland contributed about $4.9 billion/year (Kakuru et al. 2013 and GOU 2017)

Despite the importance of maintaining their direct and indirect contributions to the economy, the general state of biodiversity and ecosystems in Uganda is in decline (NEMA 2014). The clearest evidence of deterioration of biodiversity is provided by the rapid loss of country's forest estate. Between 1990 and 2015, Uganda lost 62.5% of its forest cover. The forest natural estate declined from 4.9 million ha to 1.83 million ha in just 25 years. The fastest decline of the forest resource occurred between 2005 and 2010, when annual forest cover decline was over 200,000 ha/year (MWE 2016). Wetland resources, particularly in the urban and peri-urban areas have declined considerably with estimated decline from 15.6% of land cover in 1994 to about 8% of land cover by 2010 (GoU 2013). The loss of critical wetland means the remaining wetlands in key urban centres of Kampala city and Jinja Municipality are unable to adequately treat the point source and non-point source waste water from the urban areas that enters into surface water systems. The pollution has resulted into loss of livelihoods of fishing and tourism, and high economic costs of water treatment in Kampala (World Bank 2012) among others.

1.2 Challenges of biodiversity and ecosystems conservation and management

1.3.1 Forestry resources

a) Failure to meet the forest restoration target and to reduce deforestation

The core challenges for the forestry sub-sector are the urgency to slow down the high rate of deforestation, which remains above 85,000 ha per year (Diisi 2018) and achieving the national target to restore 3.0 million ha of forest cover by 2040, i.e. 150,000 ha/year.

Uganda's forest estate consists of natural forests of Tropical High Forests (THF) well stocked and low-stocked and woodlands, and plantation forests (conifers and broadleaved) (Table 1). The woodlands in Uganda are natural forests with a sparse cover comprising of shrubs and average size trees. Woodland trees produce high quality wood fuel, particularly charcoal. The high deforestation rate that occurred between 2005 and 2015 was largely linked to the targeting of woodlands for charcoal production for domestic consumption in urban areas (NEMA et al. 2016). Tropical High Forests represent prime natural forest estate for wood production including timber and poles, among other wood products. Well stocked and low stocked THF were targeted for timber and land conversion for agriculture (Turyahabwe et al. 2015). The THF are also important habitats for mammals, birds and other species biodiversity. Efforts to expand plantation tree production on private land and in central forest reserves (CFR) have had limited impact. Between 1990 and 2015, Uganda forest plantations expanded by only 75,533 ha against a forest cover loss of 3.05 million ha.

Table 1: Change in forest land cover between 1990 and 2015

Forest category	Type of forest	1990		2015		Percent change
		Hectares	Percent	Hectares	Percent	
Plantations	Broad leaved	16,634	0.37	44,298	2.27	166%
	Conifers	15,699	0.35	63,568	3.25	305%
Natural Forest	THF Well stocked	743,154	16.34	529,186	27.09	-29%
	THF Low stocked	227,373	5.00	102,000	5.22	-55%
	Woodlands	3,544,793	77.95	1,214,478	62.17	-66%
Total		**4,880,000**	**100.00%**	**1,953,530**	**100.00%**	**-57%**

Source: MWE (2016)

b) Impact of forestry sector reforms and the decentralization processes

The most significant implementation challenge for forestry resources; however, is how to reduce the highest loss of forests cover that occurs on private land (Table 2). Over 75% of forests on private land were lost between 1990 and 2015 (MWE 2016). The high loss of forests on private land was precipitated by a combination of factors linked to changes of forest governance. The forestry sector reforms that produced the National Forestry Policy (2001) and the National Forestry and Tree Planting Act (2003) also replaced and subdivided the management of forests, a role which was centrally under the Forest Department (in the

then Ministry of Water, Lands and Environment now the Ministry of Water and Environment), into a District Forest Service (DFS) and the National Forestry Authority (NFA). The DFS[2] which comprises a District Forest Officer and a Forest Ranger was put in charge of coordinating management of all local forest reserves and forests on private land. Considering that forests on private land were 68% and 64% of the country's forest estate in 1990 and 2001, the DFS was made the main managers for forest resources in the country. Similarly, the NFA was put in charge of CFRs, which was only 16% of the forest cover in 2003. This was despite the NFA retaining and the NFA retained the core of the technical capacity and financial resource mobilisation capacity of the disbanded Forest Department.

Table 2: Forest ownership in 1990 and in 2015

Types of forest ownership	1990		2015		Percent change
	Hectares	Percent	Hectares	Percent	
All forest area	4,933,271	100%	1,956,664	100%	-60%
Forests under UWA (National Parks and Wildlife Reserves)	794,881	16%	624,578	32%	-21%
Forests under NFA (Central Forest Reserves)	791,240	16%	504,391	26%	-36%
Forests on Private Land	3,347,150	68%	827,695	42%	-75%

Source: MWE (2016)

When the DFS was created there were only 55 districts, which shared between then central government transfers including funding for forestry management. Between 2003 and 2018, the Government increased the number of districts to 121, with each district expected to have an independent DFS with little or no financial support from central government and the DLGs themselves. Consequently, districts lack the capacity to supervise forests management activities on private land.

An increasing population (population growth rate of 3.2%) with a high demand for wood, and a poorly segregated governance system were key drivers to the high deforestation. Other factors such as civil strife in the mainly woodland areas and limited livelihoods options also contributed to the high rates of deforestation.

c) Over harvesting of natural forests in protected areas

Central Forest Reserves, National Parks and Wildlife Reserves, which in addition to being protected areas (PAs) also came under pressure from the high demand for wood fuel and timber. Poor practices such as illegal harvest, overharvesting of natural forests and the poor replanting practice and forest land conversion for agriculture and settlements, among others (Turyahabwe et al 2015) have affected the integrity of forests in PAs and on private land.

d) Failure to address the livelihoods impacts of losers from deforestation

Among the many losers from the high rates of deforestation, the impact on communities living adjacent to forests has been largest. The trade-offs between long-term livelihoods of sustainable wood supply, non-wood forest products such as Shea butter, honey, medicinal plants and fibre as well as the ecosystem services such as an improved microclimate for agricultural production, pollinator services and hydrology has led to poorer households in many areas of northern and central Uganda (CIU 2015 and IUCN and MWE 2018). Communities have a strong dependence on forests ecosystems and ecosystem services and where forest resources were degraded, communities are generally more vulnerability income poverty and food insecurity. Access to forest ecosystem services provides a social safeguards reducing the impacts of poverty, immigration and food insecurity (CIU 2015).

2 The DFS (District Forest Officer and Forest Ranger) are staff of the District Local Governments. The governance change decentralised forestry management for just over 64% of the forest estate in 2003.

1.3.2 Wetland resources

a) Reduction in functional area of wetland resources

Uganda's wetland cover is approximately 10.9% of the land cover 7.6% seasonal wetlands and 3.4% permanent wetlands (MWE/JSR 2017). However, due to the degradation of many wetland areas, the functional wetland area was estimated at 8% (NEMA 2017). Uganda's strategy on wetlands is to restore "functional" wetlands to long-term land cover of 30,000 km^2 (in 1994), 13% of the country's surface area. The proposed restoration effort was estimated at 523 km^2 per year, which would allow the country to increase functional wetland cover from 18,500 km^2 (2018) to 30,000 km^2 by 2040. Currently, annual average restoration effort is estimated at 13 km^2 per year (NEMA 2017). Since FY2016/17 there has been marked improvement in restoration effort. The Ministry of Water and Environment (MWE) reported demarcation of 167.7 km^2 of critical wetlands, and restored a total of 476 ha of degraded wetlands. Even though, restoration efforts increased, the high social cost of evacuating largely poor households whose livelihoods are dependent their use of wetlands and wetland ecosystem services reduces the sustainability of wetland management interventions. Because communities are the custodians of the wetland resources, they tend to return to the same degrading activities (paddy rice production, conversion for agricultural lands and settlements, and clay mining for bricks, among others) based on the livelihoods they practiced within the wetlands (GoU 2016).

b) Spatially focused challenges of wetland management

In 2016, the Government of Uganda (GoU) with support from UN Environment and UNDP developed the National Wetland Atlas Volume II (2016). The Atlas showed the wetlands in the country aggregated into seven wetlands basins (Lake Victoria, Lake Kyoga, Lake Albert, Lake Edward, Albert Nile, Achwa River and Albert Nile wetland basins). The challenges of wetland biodiversity and ecosystem management are described below.

The leading indirect drivers for wetland degradation are the high population growth rate in the country (3.2% per annum) and the high urbanization rate of 6.6% (UBOS 2014). Wetlands encroachment is directly related to proximity to built-up area and roads, population density, market accessibility and market influence (Lwasa, 2006). Erratic development plans encourage wetlands degradation with investors including government institutions being licensed to develop wetlands. Wetlands were traditionally seen as vast, cheap and unencumbered land available for development (GoU 2016[3]). Industries put pressure on wetlands through heavy pollution loads and drainage for infrastructure development, among others.

The increasing human population in new and growing urban areas puts pressure on the wetland to provide space for agriculture, settlement and urban development. Encroachment for settlements and increased intensity of use have led to conflict between local communities over right of access and ownership, new economic activities of oil and gas exploration and development, and planned infrastructure development to support the oil and gas development.

Agricultural use of wetlands includes cultivation up to the water line; and waste (including human excreta) disposed off directly into the waters. Sand mining, open defecation and washing bays are all directed at the streams. Most wetlands are under customary land ownership and this at times complicates matters as the communities feel that they can do as they please with the wetlands.

Whereas the Nile Basin wetlands support hydroelectric power generation, and in the Achwa Wetland Basin biodiversity based enterprises of Shea, charcoal and firewood and for water for domestic use and agriculture supports rural livelihoods, the socio-political conditions have not always been conducive. The prolonged insurgency (armed rebellion) intensified poverty and increased dependence on natural resources. Due to the high levels of poverty, unsustainable exploitation of the natural resources including wetlands and the Shea tree, among others places high pressure that limits restoration through natural regeneration.

3 The allocation of wetlands for industrial development, for instance through the Kampala Development Plan 1972, set the stage for wetlands encroachment (GOU 2016).

Other challenges include encroachment on wetlands that buffer lakes and rivers, where neighbouring communities often ignore the 100m exclusion zone as specified under the law. Much of the natural vegetation that used to stabilise the riverbanks have been replaced with agricultural crops (GOU 2016). Fencing off of private land restricts the communities from freely accessing the wetland resources. Overstocking of livestock has led to hardening of soils, increased runoff, and increased soil erosion and sedimentation (IUCN 2015).

1.3.3 Species diversity

Uganda has a rich species diversity with reported occurrence of over 18,783 species of flora and fauna. However, knowledge of the species diversity is generally confined to a few taxa, specifically; birds, mammals, butterflies, higher plants, reptiles, amphibians and fish. This is because of their relative conspicuousness and economic importance. Little is known about the less conspicuous ones including important forms such as belowground biodiversity. Since 1999, the National Biodiversity Data Bank at the College of Agriculture and Environment Sciences (CAES) Makerere University has spearheaded the production of the State of Uganda's Biodiversity reports. The state and trends of biodiversity are assessed based on nine indicators under the categories of: agricultural and pastoral areas, tourism, forests, wetlands and open waters, wildlife, biodiversity capital, Albertine Rift, urban areas and the living planet. The current methodology used for assessing biodiversity of species is based on 298 lines of time-series data, covering a period between 1960 and 2016. But the data itself shows that most lines only have data for two years, separated by at least three years while 15 lines have no data yet. The current data set is heavily biased towards birds and mammals with only seven data sets for plants, all of which are trees, monitored, while invertebrates are represented only by 10 sets of butterfly and moth counts. There is one line for fish, one for reptiles (Nile Crocodiles in Murchison Falls NP), 104 for birds and 161 for mammals, and 18 data lines for habitat extents.

Beyond ecosystems, such as forests and wetlands, there is a strong need to integrate management of species diversity into biodiversity conservation and management because: (i) species functional characteristics strongly influence ecosystem properties (e.g., competition, facilitation, mutualism, disease, and predation). Alteration of the animal or plan life (biota) in ecosystems via species invasions and extinctions caused by human activities also alters ecosystem goods and services. Moreover, many of these changes are difficult, expensive, or impossible to reverse or fix with technological solutions; (iii) the effects of species loss or changes in composition, and the mechanisms by which the effects manifest themselves, can differ among ecosystem properties, ecosystem types, and pathways of potential community change; (iv) some ecosystem properties are initially insensitive to species loss because (a) ecosystems may have multiple species that carry out similar functional roles, (b) some species may contribute relatively little to ecosystem properties, or (c) properties may be primarily controlled by abiotic environmental conditions; and (v) More species are needed to insure a stable supply of ecosystem goods and services as spatial and temporal variability increases (Hooper et al. 2005).

To strengthen links to policy and management, there is need to integrate ecological knowledge of biodiversity with understanding of the social and economic constraints of potential management practices. Understanding this complexity, while taking strong steps to minimize current losses of species, is necessary for responsible management of ecosystems and biodiversity (Hooper et al. 2005). Alongside the loss in spatial cover of ecosystems, human actions are altering the composition of biological communities. The limited knowledge on the ecological functions of biodiversity and integration within the values approach limits the prospects of achieving comprehensive biodiversity conservation and management. By introducing an ecosystem based management system biodiversity values can be segregated to show socio-cultural, economic and ecological indicators (Laurila-Pant et al. 2015) to guide the broad scope of sustainable development.

1.3.4 Link between finance solutions and NBSAP II targets

The links between the NBFP and its finance solutions, the NBSAP II, and NDPII, National Vision 2040, and international frameworks of the Strategic Plan for Biodiversity (2010-2020) and the Sustainable Development

Goals (SDG) are shown in Figure 2. The NDPII has integrated the SDGs, which in turn were also developed with integration of the Strategic Plan for Biodiversity (2010-2020) at the global level. The finance solutions presented specifically address the constraints identified in the BIOFIN process, but also communicated in national sector performance reports, priorities highlighted in Uganda's development planning processes, and the National State of Environment Report (NSOER 2016) and the National State of Forestry Resources Report (2016), among others.

Figure 2: Conceptual framework linking the NBSAP, Strategic Plan for Biodiversity, SDGs, UGGDS, NDPII and National Vision 2040

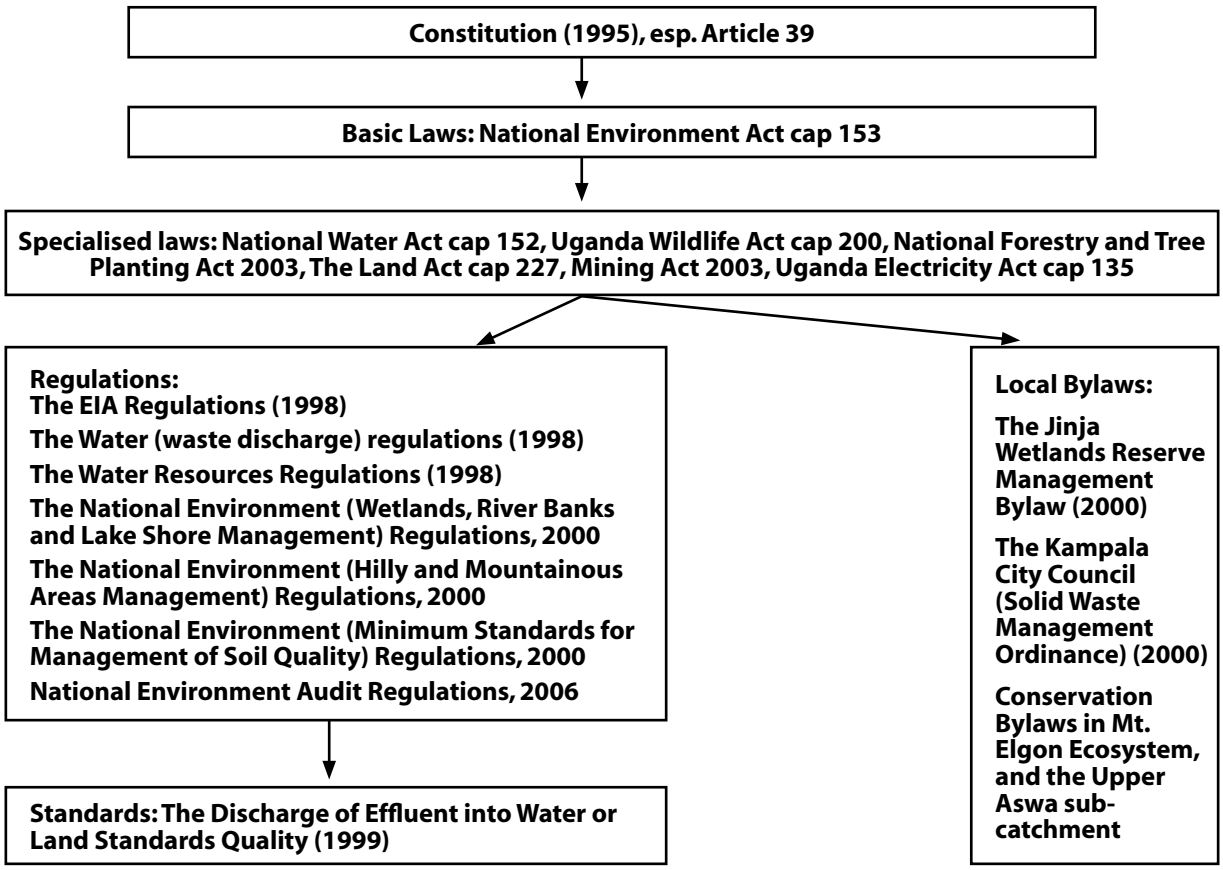
Source: Adapted from NEMA (2016; GOU 2017)

In 2017, the Government of Uganda completed the Uganda Green Growth Development Strategy (UGDDS). The UGGDS specified the Government's sustainable development priorities and the process benefited from and integrated Uganda's BIOFIN process. Uganda's NBSAPII was already mainstreamed into the NDP II, however, the UGGDS provides specific actionable plan for national implementation.

1.3.5 Limitations of current regulatory and enforcement mechanisms

The legislative core for biodiversity management lies into the National Environment Act Cap 153, the Wildlife Act Cap 200, the National Forestry and Tree Planting Act (2003), the Public Finance Management Act (2015), among others made provisions for mobilisation and/or utilisation of financing for biodiversity management purposes (Figure 3).

Figure 3: Framework of biodiversity-related legislation and regulations in Uganda



Source: NEMA et al. 2017

When natural resources, including minerals, oil and gas, water abstraction for hydropower, are extracted from an area, the laws provide that the Local Governments obtain royalties while the central government obtains resources rents through taxes and revenue sharing agreements with private companies (Crawford et al. 2015). The laws and policies require that resource rents and royalties are used for, among other uses, biodiversity and ecosystem management. However, during the PIR process and subsequent consultations with DLGs showed that 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 also likely that these charges are too low and are not based on a realistic cost and benefit analysis (NEMA et al. 2016). Nonetheless, resource rents and royalties have potential to contribute significantly to biodiversity management.

International finance instruments such as the Global Environment Facility (GEF), Global Climate Facility (GCF), financial resources mobilised through multilateral and bilateral relationships with the European Union (EU) and EU countries, and United Stated Agency for International Development (USAID), among others contribute to bridging the financing gap for biodiversity management in the country. As the need for use and conservation of biodiversity and ecosystems increased in the country, it is expected that the international finance instruments will play an increased role, particularly in supporting financing solutions to current biodiversity conservation and management challenges.

Resource user rights, conservation funds and private sector instruments are implemented as complementary instruments for biodiversity management financing. Resource user rights and conservation funds complement compliance and natural resource management instruments while private sector instruments generally support conservation activities of non-governmental organisations (NGOs).

Table 3: Existing finance mechanisms for biodiversity management

Finance mechanism	Legislation	Contribution to biodiversity	Main limitations
Environmental taxes and environmental compliance instruments			
1. Environmental Levy and proposed Oil and gas environmental taxes	Public Finance Act 2015	Avoided pollution with heavy metals and chemicals to wetlands, and water catchments and air pollution	The funds collected are transferred to the consolidated fund and with no specific earmarking biodiversity management
2. Fees, Enforcement Fines & Charges	EIA Regulations 1998 National Environment Act Cap 153	Compliance to national environmental management standards	The EIA regulation and Environment Audit Regulations provide basis for fines and charges. However, there is limited data to show how instrument has performed. Moreover, abuse of EIA conditions occurs regularly.
3. Performance Bonds	Under the National Environment Act Cap 153	Preventive charge for compliance to environmental management standards	Are not implemented even though they were described in the National Environment Act Cap 153.
4. Wetland User Permit Fees	National Environment Act Cap 153	Resource use regulation charge	Generally abused with illegal structures and individual use over societal welfare.
5. Wetland Restoration orders	National Environment Act Cap 153 Water Act cap 153	Penalties to comply to national environmental management standards	There limited data on how instrument has performed. However, misuse of wetlands is major environmental concern.
6. Biodiversity Offsets	National Environment Act No. 5 of 2019	Compliance to national environmental management standards	Instrument was not prescribed under the National Environment Act Cap 153 but emerged as a good practice. Implementation challenges include use of offset compensation for non-conservation activities as increasing salaries and administrative costs. Overlap between offset activities and clashes between project developers and regulators
7. Payment for Ecosystem Services	National Environment Act No. 5 of 2019		Instrument are prescribed under the National Environment Act 2018 as a good practice measure. PES will be an activity allowed as part of mitigation actions prescribed in the EIA regulations.
Central Government transfers			
1. Sectoral Allocations to MWE and its Agencies, MTTI and its agencies, MAAIF and its agencies	Public Finance Act 2015	Budgetary allocation in the National Development Plan and Vision 2040	Central government transfers core to policy, coordination, monitoring and restoration actions. There is generally Limited capital investments.
2. Budgetary Allocations to Local Government specifically PAF Funds for Wetland Management	Public Finance Act 2015, Local Government Act Cap 243.	Budgetary allocation for wetland conservation and staff salaries for undertaking environmental management	The resources allocated are usually limited and limited to wetlands management. No clear criteria exist except land size of district. Only 20% of the wetland management activities are catered for.

Finance mechanism	Legislation	Contribution to biodiversity	Main limitations
Natural resource management instruments			
1. 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.	Poor implementation of instrument led to increased illegal fishing practices. Fisheries were developed between 2005 and 2008, and government turned to Ministry enforcement actions and
2. 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 DLG	Whereas instruments are supposed to apply the principle of sustainable use, poor governance resulted into abuses that encouraged deforestation.
3. Catchment Management Committees	Water Act cap 152 Catchment Management Guidelines	Mandate with support of DWRM to plan for sustainable management of catchments based on guidelines putting financial resources together for managing catchment	The model for mobilizing funds, use and governance for financial resources is unclear.
4. Gate Fees or entrance fees	Uganda Wildlife Act Cap 200; Uganda Wildlife Education Centre Act 2015; and National Forestry & Tree Planting Act, 2003	Obtain revenues for running institution and manage number of visitors	The performance of the instrument well document and information used as basis for revenue sharing with communities.
5. Tourism Packages fees (hot springs, Mt. climbing, game drives, sport fishing, etc.	Uganda Wildlife Authority and Uganda Wildlife Education Centre Bill National Forestry & Tree Planting Act, 2003	Obtain resources for managing biodiversity under jurisdiction provide tourists and visitors with a quality service and experience	The performance of the instrument well document and information used as main form of non-tax revenue (NTR) for UWA, NEMA and UWEC.
Market based instruments			
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	In urban where solid waste and waste water are a major source of pollution to wetlands and surface water systems
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	Afforestation/reforestation activities are relatively small and they are voluntary. A/R projects agro-forestry have been used to reintroduce limited impact on pressure to encroach on natural forests
4. EBA Climate Adaptation Fund for Mt. Elgon Ecosystem	Proposed under Revised National Environment Bill	Adaptation through landscape restoration activities and supporting agricultural livelihoods and soil and water conservation practices	The adaptation fund showed strong potential for restoration of mountain landscapes where agriculture is practiced. The scope of practice is limited and scaling up is required.

Finance mechanism	Legislation	Contribution to biodiversity	Main limitations
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	The carbon fund showed strong potential for restoration of mountain landscapes where agriculture is practiced. The scope of practice is limited and scaling up is required.
Resource Rents and Royalties			
1. Minerals sector resource rents & royalties	Mining Act 2003	Returns for resource extraction to government on behalf of citizens.	A review conducted by IISD (Crawford et al. 2015) found that resource rents and royalties were not fully implemented in the mineral sector. This was linked to poor governance and limited monitoring of instruments.
2. Oil and gas sector resource rents & royalties	Oil and gas revenue management policy (2008),	Returns for resource extraction to government on behalf of citizens.	The legislative framework has been developed. Regulations and guidelines are being develop. Implementation expected to begin in 2020.
3. Revenue Sharing with communities neighboring PA.	Uganda Wildlife Act Cap 200	Enhance community participation in forest conservation and conservation of protected areas e.g. National Parks	Instrument well documented and monitored by Districts adjacent to Protected Areas, with exception of forest reserves and wetlands.
International finance instruments			
1. Green Climate Fund Project	UNFCCC in support of Rio MEAs	Building Resilient Communities, Wetland Ecosystems and Associated Catchments in Uganda Project	The project is implementing climate change adaptation through wetland management and building resilience for wetland.
2. Global Environment Facility	Convention on Biological Diversity, UNFCCC, UNCCD	Support implementation biodiversity conservation priorities in the NBSAPs	GEF support to institutional capacity building and project implementation is well documented
3. Concessional Land leases under Sawlog Production Grant Scheme	EU Funding National Forestry & Tree Planting Act, 2003	Increase sustainable production of timber to meet the country's needs	The project whereas successful only addressed a small component of Uganda's deforestation challenge. The focus has been on enhancing commercial forestry production. The impact on biodiversity conservation has not been documented.
4. Farmer Income Enhancement and Forest Conservation	EU funding National Forestry & Tree Planting Act, 2003	Increase livelihoods and sustainable tree production on farm lands	The focus of project has been integrating agro-forestry and watershed management into farming systems. The impact on biodiversity conservation has not been documented.
Resource User Rights			
1. Collaborative Resource management	National Forestry and Tree Planting Act, 2003. Uganda Wildlife Act Cap 200	Enhance community participation in forest conservation and conservation of protected areas Benefit sharing for NPs and Wildlife Reserves	Stewardship programmes that are poorly documented. Their contribution to sectoral performance and national economy has not been articulated. Their potential co-benefits are high for community livelihoods. However the beneficiaries are usually about 10-20 parishes (1 parish has 6-8) i.e. about 3000 household/villages protected areas communities adjacent to the PAs;
2. Wetland user committees	National Environment Act Cap 153, National Wetland Policy 1995	Enhance community and sustainable use of wetland resources, Limit degradation from encroachers	

Finance mechanism	Legislation	Contribution to biodiversity	Main limitations
Conservation Funds			
1. Uganda Biodiversity Trust Fund	Revised National Environment Bill, Uganda Wildlife Act Cap 200	Provide a funding pool for all biodiversity conservation actions in the country	The fund seeks to mobilise UGX 5 billion between 2018 and 2020. So far the fund has mobilized $100,000. There may be need for increased integration of public financing into the Trust Fund's activities.
2. Bwindi Mgahinga Conservation Fund	Uganda Wildlife Act Cap 200	Provide incentives for communities to contribute to Mountain Gorilla Conservation in BINP and MGNP. Invests on the New York Stock Exchange to increase funds available for conservation.	The most successful biodiversity conservation fund in the country. Has a narrow scope for the Bwindi-Mgahinga Conservation Area (BMCA). Needs to be scaled up.
3. Community Environment Conservation Fund	NGO Act 2016, 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)	Successful model at micro-catchment level and needs to be scaled up to large landscapes, sub-catchments and catchments.
Private Sector instruments			
1. Corporate Social Responsibility (Coca Cola, Standard Bank, Standard Chartered Bank, MTN, Airtel etc.	Private corporate social responsibility funds, Corporate outreach.	Giving back to consumer communities and contribution to poor communities' welfare.	Generally limited in scope, and generally dictated by private sector. There is potential for improved articulation of the role of biodiversity management to society and the commercial banks' corporate responsibility.
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.	The financing instrument are not clearly articulated. The catchments committees do not have a regulated financing system. Micro-financing institutions are used but regulated conservation financing system is needed.
4. Value chains for niche landscape biodiversity products (Shea Butter, Gum Arabic, resins, papyrus, and organic agriculture	National Agricultural Policy, 2013; Organic Agriculture Policy (Draft); National Environment Act Cap 153; National Forestry and Tree Planting Act 2003; and Uganda Wildlife Act Cap 200	Producing food in a complete cycle with minimal external inputs and compliance to high organic standards.	Whereas the value chains have high potential. Thy have a limited consideration on government policy. Need to articulate the potential, provide appropriate policy, legislative and institutional support.

Source: NEMA/UNDP/Global BIOFIN (2017)

Uganda's Biodiversity Expenditure Review (BER) showed that public expenditure on biodiversity conservation and management between 2005/6 and 2014/15 averaged UGX 9 billion/year (real term) equivalent to 1.2% of the annual budget of the Government of Uganda. The public biodiversity expenditure review was based on biodiversity specific expenditure for the Ministries of Agriculture, animal Industry and Fisheries, Energy and Mineral Development, Tourism, Wildlife and Antiquities, and water and environment. The BER also showed a natural focus social services on sectors such security, health and education, followed by industrial sectors of transport, energy and mineral development. Biodiversity related sectors of agriculture, forestry, fishing and tourism received less than 10% of the national budget. The finance needs assessment for the biodiversity management and conservation for the four core sectors (agriculture, energy and mineral development, water and environment, and tourism, wildlife and antiquities) was estimated at average of UGX 472 billion/year (129.5 million/year)

Nonetheless, the guidelines and action for financing biodiversity conservation in Uganda (NEMA 2016) had estimated an aggregate of $670.7 million/year for all biodiversity related expenditure across government for public and private sector. The FNA provided a refined and prioritised biodiversity specific finance needs of $ 129.5 million/yea, for public investments in the four core biodiversity management sectors

1.4 Finance Plan Targets

The resource mobilisation target for biodiversity and ecosystem management is two-fold. The first target was established as part of the development of NBSAP II for Uganda. The biodiversity related financing gap was estimated as part of the Guidelines and Action Plan for Financing Biodiversity Management in Uganda (NEMA 2016). The second target of financing plan was based on the finance needs assessment and financing gap (FNA) for biodiversity management in Uganda. The specific gaps are described below.

The finance needs assessment (FNA) conducted comprehensive assessment of Uganda's priority finance needs. The total cost of the implementation of the NBSAP was estimated at UGBX 2,859.9 billion on average, Uganda required about UGX 472.6 billion for biodiversity conservation and management per fiscal year (Table 4). Furthermore, about 96.6% of the total cost of implementation of the NBSAP II are to implement the strategic objective 3; these costs are related to the restoration of forests and wetlands. About 81% and 17% of this annual total cost are for activities related to restoration of forest and fragile ecosystems respectively. The remainder of the finance needs is shared out in the other six strategic objectives.

Table 4: Finance needs targets by strategic objective of the NBSAPII

	Fiscal Year (UGX-billion)						
Strategic objectives	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
1. Strengthen stakeholder co-ordination and frameworks for biodiversity management	3.0	3.2	4.0	3.9	3.8	3.7	5.9
2. To facilitate and build capacity for research, knowledge and information management and exchange on biodiversity	2.5	2.5	2.6	2.9	2.9	3.2	3.4
3. To reduce and manage negative impacts while enhancing positive impacts on biodiversity	391.9	411.7	432.5	454.4	479.3	500.3	524.9
4. To promote the sustainable use and equitable sharing of costs and benefits of biodiversity	3.1	3.4	3.9	4.1	4.1	4.0	4.3
5. To enhance awareness and education on biodiversity issues	2.7	3.2	2.8	3.0	3.1	3.9	3.4
6. To harness modern biotechnology for socio-economic development with adequate safety measures for human health and the environment	1.7	1.9	1.9	2.1	2.0	2.0	2.1
7. To promote innovative and sustainable funding mechanisms to support NBSAP implementation	0.4	0.4	0.6	0.4	0.4	0.4	0.5
Overall	**405.3**	**426.2**	**448.2**	**470.7**	**495.6**	**517.6**	**544.5**

Source: NEMA, UNDP and BIOFIN (2018)

2. VISION, MISSION, GOAL AND BIODIVERSITY FINANCE SOLUTIONS

2.1 Vision of Biodiversity Finance Plan

The ***vision*** for Uganda's NBFP is **"sustainable and innovative financing for biodiversity conservation and management attained by 2027/28".** The finance plan supports implementation of the country's National Biodiversity Strategy and Action Plan (NBSAPII 2015/16 – 2024/25). The Vision of Uganda's NBSAPII is "to maintain a rich biodiversity benefiting the present and future generations for socio-economic development" while the goal is "to enhance biodiversity conservation, management and sustainable utilisation and fair sharing of its benefits by 2025".

The ***mission*** of the NBFP is **"to mobilise adequate additional financial resources to meet the biodiversity funding gap as well as ensure that funds are used efficiently and effectively to address the biodiversity and ecosystem challenges in biodiversity and ecosystem conservation and management."** The National Focal Point for mobilising funds for biodiversity conservation and management in Uganda is the Ministry of Finance Planning and Economic Development (MFPED), while NEMA is the Focal Point on implementation of the Convention on Biological Diversity (CBD) and the lead on implementation of the NBSAP II.

Biodiversity management is at the centre of Uganda's green economy strategy and economic transformation as indicated in the Constitution of Uganda (1995), the National Development Plan II (2015/16 – 2019/20), and Vision 2040 (2010/11 – 2039/40). **Under Objective XXVII**, **the Constitution** indicates that the State shall promote sustainable development and public awareness of the need to manage land, air, water resources in a balanced and sustainable, and utilization of natural resources to meet the development and environmental needs of present and future generations. Also, that the State, including local governments, shall create and develop parks, reserves and recreation areas and ensure the conservation of natural resources, and promote rational use of natural resources so as to **safeguard and protect biodiversity** (GoU 1995).

In line with the national constitution, the legislation for biodiversity and ecosystem conservation and management whereas fundamentally covered under sector legislation on forestry, environmental management, agriculture, mining, wildlife and energy, among others, was specifically reinforced under the national land legislation. The land Act Cap 227 provides for the tenure, ownership and management of land; to amend and consolidate the law relating to tenure, ownership and management of land; and to provide for other related or incidental matters. The Land Act, Cap 227 (Section 43) indicated that whoever owns or occupies land must manage and utilize the land in accordance with the Forest Act, the Mining Act, the National Environment Act, Water Act, the Uganda Wildlife Act and any other law. In addition, (under Section 44 (1)), the Land Act Cap 227 provides that Government or local government hold in trust for the people and protect natural lakes, rivers, ground water, natural streams and ponds, wetlands, forest reserves, national parks and any other land reserved for ecological and touristic purposes for the common good of the citizens of Uganda.

The NBSAP provides the Government with a framework for implementing its obligations under the CBD as well as the setting of conservation priorities, channeling of investments and building of the necessary capacity for the conservation and sustainable use of biodiversity in the country (NEMA 2016). The strategic objectives of biodiversity conservation and management as set out in the NBSAP II are:

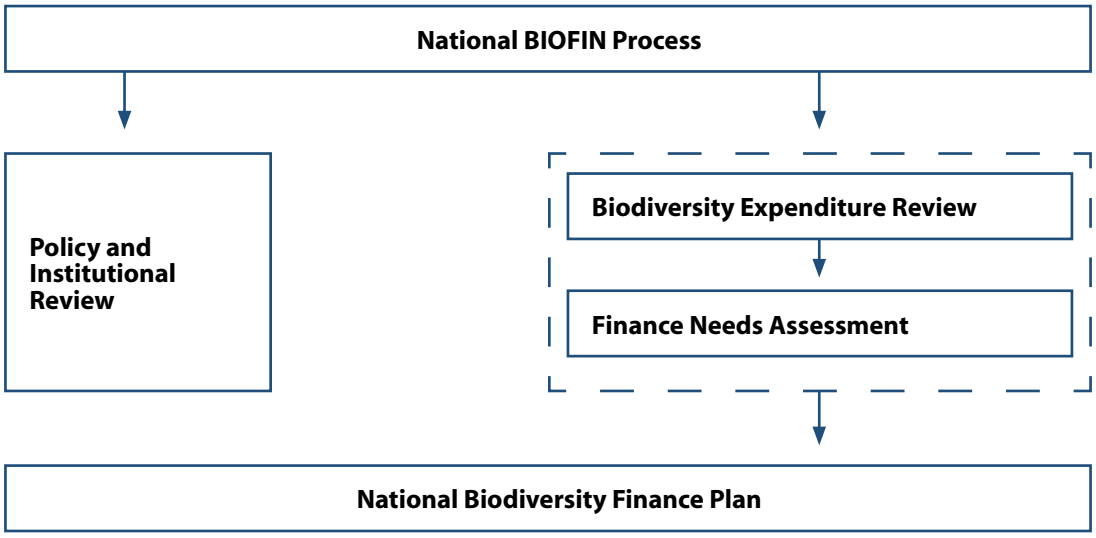
(i) To strengthen stakeholder co-ordination and frameworks for biodiversity management.
(i) Facilitate and enhance capacity for research, monitoring, information management and exchange on biodiversity.
(ii) Put in place measures to reduce and manage negative impacts on biodiversity.
(iii) Promote the sustainable use and equitable sharing of costs and benefits of biodiversity.
(iv) Enhance awareness and education on biodiversity issues among the various stakeholders.
(v) Harness modern biotechnology for socio-economic development with adequate safety measures for human health and the environment.
(vi) To promote innovative sustainable funding mechanisms to mobilize resource for implementing the Strategy.

2.2 The BIOFIN process

Globally, BIOFIN is managed by the UNDP Ecosystems and Biodiversity Programme in partnership with the European Union, and the Governments of Germany, Switzerland, Norway, and the Flanders.

In Uganda, the BIOFIN project was launched in August 2015. The project was implemented in the standard phased approach. The first phase comprised of two studies, the Biodiversity Finance Policy and Institutional Review (PIR), and the Biodiversity Expenditure Review (BER). The second phase comprised of the Biodiversity Finance Needs Assessment (FNA) and the National Biodiversity Finance Plan (NBFP) (as shown in Figure 4).

Figure 4: Overview of National BIOFIN process



Source: UNDP (2016)

The key outcomes of the PIR was the synthesis of the financing mechanisms used for financing biodiversity in the country, and assessment of the historical and current policy and institutional process and practice of biodiversity management. The BER provided an indication of the public sector appropriations and expenditures realised in biodiversity conservation and management in the country. The BER focused on four national ministries of agriculture, animal industry and fisheries (MAAIF), water and environment (MWE), tourism, wildlife and antiquities (MTWA), and energy and mineral development (MEMD). The most important outcome of the BER was the fact that less than one-quarter of the funds current allocated to biodiversity are actually invested into restoration and maintenance of biodiversity instead funds are generally invested in coordination and policy actions.

The finance needs assessment benefited from the results of the PIR and BER. The finance needs assessment showed that more than 90% funds raised for biodiversity in the country will be invested directed in restoration, maintenance and protection of biodiversity.

At a process level, the technical process in Uganda were based on stakeholder consultation processes. Formally, a technical steering committee was used to direct the process of implementing the activities of the project. National stakeholder meetings were used to discuss and prioritise the technical findings of the national BIOFIN consultations through the project implementation. NEMA, the National Forestry Authority (NFA), Uganda Wildlife Authority (UWA) and the Ministry of Tourism Wildlife and Antiquities (MTWA) were more involved in regular key informant meetings.

Both UNDP and Global BIOFIN provided direct and regular technical support through a regional technical advisor. The Global BIOFIN team also provided regional clinics for country teams at which the technical process was discussed both with the Global team, external experts from UNDP and other national BIOFIN teams provided a chance for cross learning. An online platform through webinars, Skype calls and phone conversations also increased the intensity of engagement.

The finance solutions developed in the NBFP were initially obtained as a long list from the financing mechanisms in the PIR. The BER report and process of developing the FNA provided additional information for sieving and prioritising the finance solution. Out of a long list of 50 finance solutions the BIOFIN Prioritisation Excel was used to reduce the list to 17 finance solutions that had an average score of 80% on priorities such as contribution to biodiversity management, innovation, clarity of finance mechanism, socio-political considerations and ability to mobilise funds for biodiversity management, among others. An initial Draft NBFP report was produced with the 17 finance solutions. Interventions of the technical steering committee, the technical support team in NEMA, Global BIOFIN, and revisions by the national BIOFIN team led to the outcome eight (8) finance solutions. The final eight (8) finance solutions were extensively reviewed and developed to provide a clear path for addressing the joint challenge of resource mobilisation and biodiversity conservation and management.

2.3 Goal and objectives and biodiversity finance solutions

The goal of the plan is to achieve "optimal and sustainable financing for biodiversity conservation and management attained by 2027/28." Three objectives complement the goal of the NBFP.

The objectives are:

(1) To develop and implement a biodiversity and ecosystem index and payments for ecosystem services.
(2) Enhance the use of economic instruments as incentives for biodiversity conservation and management.
(3) Scale up innovative biodiversity management and conservation actions that enhance livelihoods and increase national revenue.

There are eight (8) finance solutions developed for implementing the NBFP. The eight finance solutions are:

1. A national biodiversity and ecosystem index and biodiversity fiscal transfers.
2. A national programme on payments for ecosystem services.
3. Scaling up bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model.
4. Upgrading the ecotourism value chain for Ramsar sites and Kampala city and Mbarara municipality.
5. Upgrading the value chain for organic agriculture, natural ingredient, cosmetics and pharmaceuticals.
6. Rationalise and implement revised charge systems for biodiversity and ecosystem conservation and management.
7. A financing model for biodiversity conservation for central forest reserves.
8. Standardize and regulate implementation of biodiversity offsets.

3. FINANCE SOLUTIONS AND THEIR BUSINESS CASE

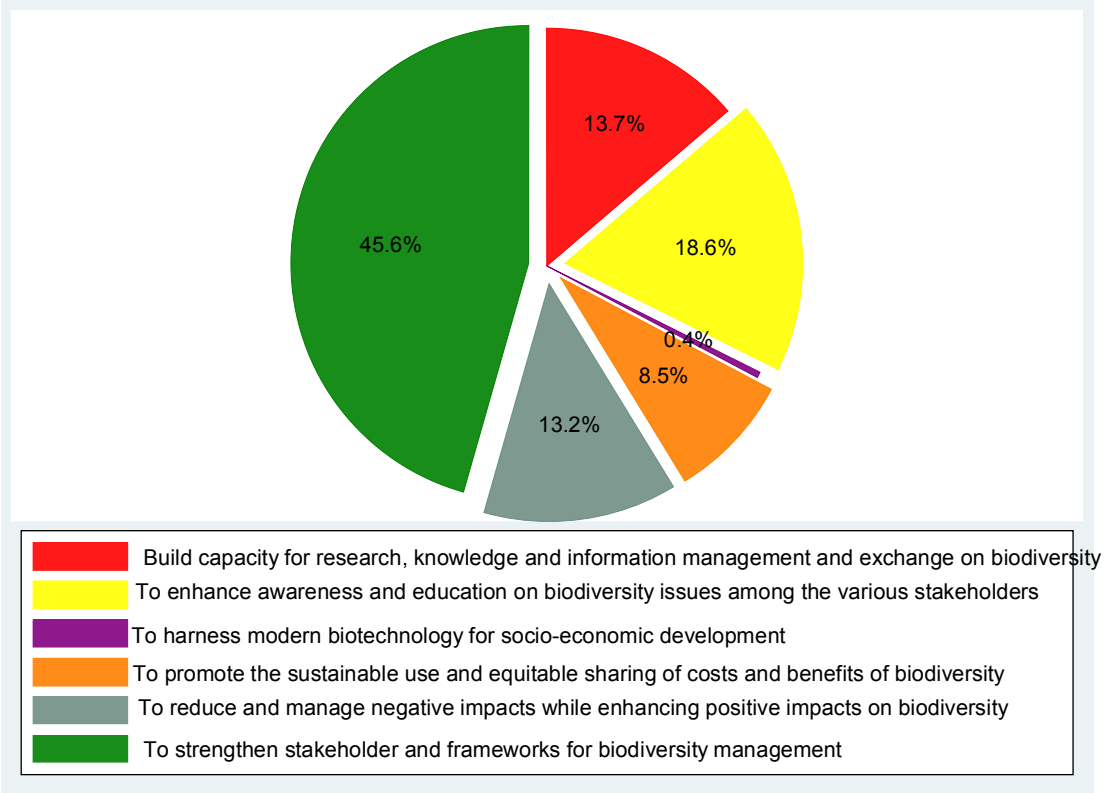
3.1 National biodiversity and ecosystem index and biodiversity fiscal transfers

3.1.1 The finance solution

The finance solution seeks to ensure that there is clear accountability for biodiversity investment funds by developing and implementing a national index, with flexibility at sub-national level, that allows for government, and other funding partners to monitor the performance of biodiversity investment, but to also ensure that the investments are scored in line with the NBSAPII, the NDPII and funding agencies expectations. Therefore, in addition to the index, a guide will be developed for implementing biodiversity fiscal transfers. Fiscal transfer guide will be adapted for both public and non-public sector financing.

The rationale for the finance solution is based on the findings of the BER and PIR reports, which showed that a disproportionately large percentage, 45.6% according to the BER (Figure 4), of the financing meant for biodiversity conservation and management was spent on strengthening coordination and policy actions. Consequently, only about 22-25% of the budget was actually invested directly into biodiversity restoration or maintenance despite the high, year on year, rate of biodiversity and ecosystems loss.

Figure 5: Biodiversity budget share by strategic objectives



Source: NEMA, UNDP and BIOFIN (2017b)

3.1.2 Proposed Actions

There are four proposed four actions for developing the biodiversity and ecosystem service index and guidelines for biodiversity fiscal transfers described below.

1. Develop the biodiversity and ecosystem services index

The proposed national biodiversity and ecosystem services index serves as a tool that specifies qualitative and quantitative unit of effort required to achieve the biodiversity conservation management targets described in the NBSAP II and the Vision 2040 and second National Development Plan (NDPII). The index which coalesces all the biophysical and qualitative indicators then guides appropriation of ecological transfers to be made for biodiversity and ecosystem management, across the different stakeholders in the country. The index will generally categorise actions under two groupings of restoration and management actions. The development of the index through development of weights (units of effort) of restoration or management, that provide an effective indication of effort of biodiversity and ecosystem restoration or management. The metrics used in the index may include hectares to restore, specified species of biodiversity to re-introduce and hectares or numbers of a specified invasive alien species to remove. The smallest unit of effort will be at appropriate for individual household level interventions but aggregated can be aggregated larger scales of sub-counties, Districts, sub-programmes, programmes (sub-sectors) and sectors to guide implementation of fiscal transfers. The index will provide the basis for the technical efficiency or cost-effectiveness assessments, on the other hand, and provide an indication for financial appropriation and allocative efficiency assessment.

2. Determine responsibility for biodiversity and ecosystem management

The interventions will be sub-divided and responsibility specified for different stakeholders. Suppliers (producers) of ecosystem services, and stakeholders that consume or use ecosystem services will have prescribed metrics of effort (Table 5). The index will benefit from natural capital accounting. The biodiversity and ecosystem service index will be matched with stakeholders through supply and use tables. Attribution of responsibility of the expected contribution towards management and restoration actions and the options considered.

Table 5: Developing proposals on responsibility for the biodiversity and ecosystem service management action

Component by management action	Options for interventions	Metrics	Guidance for fiscal transfers/ reforms
Users: **Wetlands:** include private sector and communities who abstract water, extract sand, and harvest papyrus, fish, foods, grass, among others Forests include commercial harvesters and community users for timber, wood fuel among others **Water resources:** private sector and communities who abstract water, fish etc.	A use plan based on maximum sustainable yield thresholds. Employ moratoriums for degraded resources. Contribute funds to sustainable management of wetland resources. Employ efficient technologies that minimize damage to biodiversity and ecosystems. Employ efficient technology that minimizes quantity of resources.	Savings in area of ecosystem degraded. Savings on fuel consumption translated into forest area (or biomass) Savings in wetland area encroached Area of wetland sustainably utilized	Voluntary compliance certification. Waivers on compliance charges. Renewal of user licensees Fiscal transfers to support scaling up of successful technologies
Producers: Wetlands include communities living within or adjacent to wetlands, MALGs who coordinate management actions Forests/ wildlife include private forest owners, communal forest owners, farmers practicing agro-forestry, NFA, UWA and DLGs who coordinate management actions **Water resources:** private sector and communities living within or adjacent to water resources MDAs and DLGs who coordinate management actions	Have sustainable production plans. Marking and restore degraded areas. Maintain ecological buffers between critical biodiversity and livelihoods activities. Cleaning up pollution damage. Restricting access for encroachers Undertaking community conservation and production actions such as apiary, community wildlife use rights, ecotourism,	Area sustainably managed Areas restored based on stated baseline or benchmark Water quality improvements Ecosystem service yield restoration levels (fisheries, sustainable water supply enhanced, grass or forage production, wildlife habitats restored) Area of farm lands under forestry production	Transfers to MALGs responsible Transfers to community associations responsible Transfers to private farmers/ private sector responsible

3. Developing guidelines for and piloting ecological fiscal transfers

Based on the information generated from the biodiversity and ecosystem services index and attribution of responsibility and options, guidelines will be developed. The guidelines will indicate how fiscal transfers from all funding sources will be used to achieve the biodiversity and ecosystem services restoration and management in the most efficient and cost-effective manner. The guidelines will show investment required to achieve stated conservation outcomes that are aligned to the NDPII, Vision 2040 and the Uganda Green Growth Development Strategy (UGGDS).

The piloting of ecological fiscal transfers is proposed for restoration and management of Uganda's forest cover. The index and fiscal reforms would benefit from the existence of strong datasets on forestry biodiversity and ecosystem services in Uganda, and assessments of forest landscapes and forest landscape restoration opportunities (MWE and IUCN 2016). Out of Uganda's seven forest landscapes, the Northern Moist landscape and the afro-montane landscapes are some of the most vulnerable forest zones that can be used for piloting the indexing and guidelines for ecological fiscal transfers. Ten Districts are proposed for inclusion in piloting of the ecological fiscal transfers.

3.1.3 Feasibility of finance

The finance solution is viable with a net present value of UGX 374 billion (equivalent to $101 million) against an investment of UG 40.26 billion (equivalent to $11 million) over the nine-year timeline between 2019/20 and 2027/28. The average annual outlay would be UGX 4.5 billion/year for all District across the country ($1.2 million) (Table 6, See Annex II). However, the figures will be increasing as more and more Districts are integrated in the indexing system and the fiscal transfers.

Annex II shows the actual cost outlays and expected benefits of developing and implementing biodiversity and ecosystem index and transfers. The benefits were based on and financial and economic assessments for forest landscape restoration in Uganda (MWE and IUCN 2018), while the costs were also derived by benefit transfer techniques from cost estimated for forest landscape restoration in the country (MWE and IUCN 2016; 2018). The effort of index development and implementing the index and the fiscal transfers over the 2018/19 will gradually increase from 5 districts in 2021/22 to 70 districts by 2027/28.

Table 6: Economic viability

Description of aggregates	Millions UGX	Million $
Discounted total costs	40,255	10.88
Discounted total benefits costs	413,867	111.86
Discounted net benefit	**373,613**	**100.98**
BCR	**10.28**	

3.2 National payments for ecosystem services programme

3.2.1 The finance solution

As acknowledged in the policy and institutional review, in the National Environment Act (2018), a national Payment for Ecosystem Services (PES) programme is fundamental to enhancing the stewardship role of upstream communities and their contributions to catchment management, soil and water conservation and protecting the aesthetic beauty both within and outside protected areas in Uganda. Hydropower power companies, oil and gas development companies, the national water utility and several other developers have continually expressed the need for stronger regulatory support. Whereas PES in Uganda evolved as voluntary undertaking the increased economic motives associated with private sector participation, and the limited stability of land ownership and tenure in the country lead to private sector and NGO advocacy to strengthen regulation for long-term PES agreements to ensure sustainability of the ecosystem services

that serve as their raw materials. The National Environment Act No. 5 of 2019 proposed the introduction of PES as an additional economic instrument to support biodiversity conservation. The finance solution seeks to support establishment of the national PES programme covering the sub-national activities but coordinated at national level to ensure security of contracts, protect communities' rights of access to biodiversity and ecosystem services, and minimise any potential negative impacts and enhance positive impacts on biodiversity. A national regulation for the PES programme will be developed and piloted.

3.2.2 Proposed Actions

1. Regulatory system

The first step to establishing a national PES programme is to develop a national regulation. Under current practice, PES interventions are voluntary interventions. Regulatory reform for PES offers two types of opportunities; it will strengthen of contractual laws particularly for public resource such as a wetland, central forest reserve or a National Park and Wildlife Reserve, and implementation of both compliance and voluntary Environmental Management and Mitigation Plans, which are monitored through compliance or voluntary environmental audits. Additionally, the National Environment Act No. 15 of 2019 proposed PES among its clauses and additional regulations and guidelines will be required for the design of watershed payments, biodiversity conservation payments, and any other payments supporting biodiversity management and areas with synergies such as climate change management.

2. Capacity building for regulators and lead agencies to biodiversity and ecosystem management

Technical and institutional capacity building in the design, implementation, coordination and compliance support for PES will be required. The starting point for capacity building are the existing best practices within the country and from outside the country. The capacity building will strengthen PES regulatory support office at NEMA and focal points for PES coordination and compliance support in the natural resource managing entities; UWA, NFA, DWRM and DLGs, among others. Capacity building and awareness creation will also enable developers and their environmental practitioners to design efficient and effective PES actions.

3. Design and pilot system for managing PES funds/ Managing Entities for the PES

Under current best practice PES contracts will be signed between the buyers and sellers of the ecosystem services with the support of an intermediary, a managing entity. The contracts will show that buyers pay for specified ecosystems provided with clear metrics. Current experience is that the funds are held by a registered non-profit company which charges a modest administrative fee to both the seller and buyer of the ecosystem services. A payment plan is prepared and buyers makes payments based on a cash flow process that matches the payments received with verified and/or certified ecosystem services provided. Therefore, both the managing entity and the regulatory must have capacity to undertake monitoring, reporting and verification (MRV) for ecosystem services. Many times, the managing entity, which comprises a technical team or firm, is hired to mediate the contract, ensure the technical efficiencies sought by the PES buyers are met. The technical efficiency is ascertained through MRV and issuance of verification and/or certification, by a trusted authority. At the same time the managing entity ensures that ecosystem service providers get paid for the ecosystem services provided.

A core issue in the design and system is agreement on the metrics to use for the ecosystem service and the reward in terms of the payment. Regulator intervention, and technical support from the managing entity and external agencies will be sought to define levels of technical performance and efficiency required to command a payment from buyers of the ecosystem service. Existing best practice for watersheds and agricultural landscapes have been documented by Shames et al. 2015, and current work by WWF in the Rwenzori Mountain National Park landscape.

Three pilots are proposed for the PES. In all three cases the starting point is rationalising the designing of existing PES programmes. The national pilot with focus on areas where willing buyers and sellers of ecosystem services have been identified, and the feasibility of the PES has been studied. The three PES projects that will serve as pilots are; Watershed payments; Biodiversity conservation PES opportunity in areas adjacent to protected areas and/or rich in species biodiversity, particularly wildlife, and payments for farm agricultural and mountain landscape biodiversity.

3.2.3 Feasibility of finance solution

The business case for the national PES programme showed a net benefit of UGX 370.1 billion (equivalent to $100 million) mostly in ecosystem services protected through community stewardship actions. The specific costs of implementing the PES programme were estimated at UGX 28.7 billion ($7.75 million) over an eight-year timeline (Table 7). The PES programme is expected to grow from at least one district to 24 districts by 2027/28. The benefit cost ratio obtained was 13.9. The benefit-cost ration shows that the economic benefits of undertaking a PES are very high and robust and significant changes in the ecosystem would still mean a high economic value for continuing with the ecosystem services. The financial viability on the other hand would need to be undertaken on a case by case basis and may have significant variability. As a public intervention the economic returns support implementation of the programme. The costs and benefit cycles are respectively highlighted in Annex III.

Table 7: Benefits versus costs

Description of aggregates	Aggregate amount	
	Millions UGX	Million $
Discounted total benefits	398,820	107.79
Discounted total costs	28,692	7.75
Discounted net benefit	**370,128**	**100.03**
BCR		**13.90**

3.3 Scale up bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model

3.3.1 The finance solution

Due to limited budgeting for the Environment and Natural Resources Sector, less than 1% of the national budget (NEMA et al. 2017b), the institutional framework designed for biodiversity and ecosystem management at community and sub-national level is non-functional. The National Environment Act Cap 153 established an institutional structure for environmental management based on Local Environment Committees (LECs) at village and parish level, and Sub-country and District Environment Committees (SECs and DECs). However, the structure proved too costly for the Government when the development partners who supported pilot activities, the World Bank and the United States Agency for International Development (USAID) pulled out (NEMA et al. 2017a). The failure to sustain the institutional framework is one of the major causes of decline in structured biodiversity and ecosystem management actions at community level within the country (NEMA et al 2017a). Whereas the idealised institutional framework is considered too costly to sustain, the emergence of isolated but successful bottom-up institutional arrangements proved so successful through Community Environment Conservation Funds (CECF) and other revolving groups that it has been proposed as an alternative and cheaper option, and integrated into the undertakings of the Water and Environment Joint Sector Review (JSR) 2018. The bottom-up institutional framework is proposed as an alternative institutional arrangement for implementing community level biodiversity and ecosystem management actions within the National Environment Act No. 5 of 2019 with a scale-down public sector budget compared to the institutional arrangement pilot under the previous law, the National Environment Act Cap 153.

3.3.2 Proposed Actions

1. Rationalise and carefully design institutional framework for bottom up biodiversity and ecosystem conservation and management

The first action will be to rationalise (feasibility assessment) and carefully design an institutional and governance framework for bottom up biodiversity and ecosystem conservation and management that is widely adaptable with salient features that fit different regions and communities. The institutional structure will involve community committees aggregated at parish level represented at sub county and district level, the intervention will lead to development of local biodiversity and ecosystem management action plan, sub county by laws and district ordinances. At national level the institution and governance system will be completed by national biodiversity policy which is aligned to the national environment act. It should be noted that the National Environment Act No. 5 of 2019 proposes strengthening of institutions and governance framework for environmental management.

2. Set-up an appropriate incentive system

The second action will be to develop an incentive system for the institutional framework developed. The finance solution incentives will be based on the stewardship rights awarded to communities. The communities will be able to plan for and manage biodiversity and ecosystem with support of the District Local Government. The bylaws and ordinances will empower community on enforcement of regularities against degradation and laws on sustainable use with support of DLGs, and national Ministries and Agencies. To allow the transition into the stewardships to run, revolving fund based on a cooperative structure will be established. The revolving fund will be governed within the bylaws, agreements and MOUs. Funds will be transmitted from central government, DLGs, donors and private sector, use fir conservation, sustainable use, and livelihoods activities that remove or reduce damage to biodiversity and ecosystems. The third sub-component is to scale-up the institutional systems for enforcement of biodiversity and ecosystem regulations. Also the sub-component covers the incentives of the bottom-up system.

3. Scaling up the enforcement and compliance system and incentives

In the implementation phase of the financing solution the bottom-up of enforcement for biodiversity and ecosystem management is based on community regulatory systems and incentives model will be scaled up. The scaling up will start with five Districts and increase to 140 Districts by the end of the seven years of NBSAPII.

3.3.3 Feasibility of the finance solution

The net present value obtained out of the business case for bottom-up enforcement and compliance for biodiversity and ecosystem conservation and management shows a viable finance solution. The net present value obtained out of the benefit versus cost cycles (Table 8) is projected at UGX 182.86 billion (equivalent to $49.42 million) over the nine years of piloting and implementing the finance solution.

The benefit cost ratio of 2.25 shows that the benefits provide have a 125% buffer above the costs of the finance solution suggesting that the bottom-up enforcement and compliance for biodiversity and ecosystem conservation and management is a very robust intervention with a high chance for success. The finance solution would be successful if implemented on its own, even though the high viability also suggests that it would work well in combination with the finance solutions 1 and 2, the biodiversity and ecosystem service index and guidelines for ecological fiscal reforms, and the national PES programme.

The pilot investment in the finance solution will likely focus on the feasibility studies, design of regulatory and incentive framework and a one-year pilot, over a three to four-year timeline. The cost of the pilot investment is estimated at UGX 5.02 billion. Annex IV highlights the results of the cost and benefit cycles.

Table 8: Net benefits for bottom-up enforcement and compliance for biodiversity and ecosystem conservation and management

Business case cycle	Aggregate amount (UGX millions)	Aggregate amount ($ millions)
Discounted benefits	**329,364**	**89.02**
Discounted costs	**146,502**	**39.60**
Net benefits	**182,862**	**49.42**
Benefit Cost Ratio		**2.25**

3.4 Upgrading the ecotourism value chain for Uganda

3.4.1 Introduction

Whereas critical wetland catchments such as Ramsar sites and wetlands in key urban areas provide a lot of ecosystem services, the pressure to encroach them particularly for land use change for urban settlements, and/or agriculture production is high. Nature Uganda (2015) while under community action planning for Nabajjuzi and Lake Nabugabo wetlands found that in the absence of external support to maintain sustainable use and management of critical wetlands, the communities would degrade them. The finance solution seeks to support development of sustainable use for critically endangered wetland systems of national and international importance. The most valuable non-consumptive use of the wetland systems that can be organised alongside sustainable access to ecosystems from communities, is ecotourism development. Source of value for the wetlands develop the ecotourism potential of all 12 Ramsar sites, and the Lubigi and Nakivubo wetlands in Kampala city and River Rwizi in Mbarara Municipality. Ecotourism activities will be developed for Lake Bisinia wetland system, Lake Opeta wetland system, Sango-Bay – Musambwa Island – Kagera (SAMUKA) wetland system, and Lake Nakuwa wetland all Ramsar sites in excess of 50,000 ha. Additionally, ecotourism opportunities will be developed for Nakivubo and Lubigi wetlands in Greater Kampala Metropolitan area.

3.4.2 Proposed Actions

The main ecotourism products and services to be developed are: (i) bird watching, (ii) butterfly watching, (iii) sport fishing, (iv) boat cruises, (v) canoeing, and (vi) scenery viewing. The specific upgrade investments are onsite investments in: (i) facilities: specifically; (a) accommodation as part of the eco-tourism experience conservation ethic and facilities or investments for operation of the ecotourism activity e.g. transport, communication and offices; design of the tourism package comprising the service; (a) total experience of the guests, (b) understanding activity, and (c) other needs; and the luxury; (a) leisure environmental services available to guests; (b) education, satisfaction, appreciation and style components. The onsite ecotourism experience will be rounded off with programming which comprises: (a) implementation of on-site experiences; (b) implementation development of off-site long-lasting benefits; (c) contact and education pre-, during and post-vacation; and (d) implementation interlinked experiences or activities i.e. packages.

Offsite activities are marketing, sharing of benefits and monitoring of performance: Marketing is composed of developing: (a) specialty market niches-nature/adventure/culture/education; (b) wilderness ethic, environmental stewardship enlightenment; (c) benefits plus responsibilities; and (d) Green reality (eco ethnic). Sharing benefits comprises: (a) operator, community, resource (varied benefits); and (b) for tourists the benefits that last longer than actual vacation. On the other hand, monitoring of performance is composed of assessing: (a) repeat visits and word of mouth views; (b) customer enlightenment; (c) Community/operator quality of life, cultural renewal and pride; (d) Spreading out visitation period; (e) Positive economic impact and variable business trends assessment; and (f) Resource conservation.

The wetland systems proposed for ecotourism development are highlighted in Table 9. The species abundance for wetland species, globally threatened species and regionally threatened and/or endangered species mean that they have strong conservation and tourism value.

Table 9: Characteristics of the selected wetland systems

Wetland systems	Area (ha)	Location (Districts)	No. of species	No. of wetland species	Global threatened species	Regional Red data species
Lake Bisinia wetland system	54,229	Kumi, Katakwi and Soroti	162	81	4	21
Lake Opeta wetland system	68,912	Nakapiripirit, Bulambuli, Katakwi, Kumi	174	93	3	22
Sango-Bay – Musambwa Island – Kagera (SAMUKA) wetland system	55,110	Masaka, Rakai	372	105	3	19
Lake George Wetland system	15,000	Kasese	491	167	9	28
Lake Nakuwa wetland	91,150	Kaliro, Pallisa, Soroti	258	88	3	21
Kampala-Lubigi wetland system (proxy Mabamba)	245	Kampala and Wakiso	200	91	3	19
Kampala-Nakivubo Wetland system	190	Kampala, Wakiso and Mukono	157	44	3	18
River Rwizi* (proxy Mburo-Nakivale)	24,000	Mbarara, Sheema, Buhweju Kiruhura and Ntungamo	312	92	7	28

** Conditions proxy Lake Mburo-Nakivale wetlands, one of Uganda's Ramsar sites; Nabajjuzi Wetland system proxy for Lubigi and Kampala Nakivubo wetlands; and Mabamba wetlands proxy for Kampala – Nakivubo wetland systems.*

3.4.3 Feasibility of finance solution

The projected costs are based on linear extrapolation for the results obtained from communication ecotourism planning (Nature Uganda 2014) for Mabamba wetland system in Wakiso District. The highest cost is the tourism development and promotion and regulated resource harvesting (Table 10). Other important costs are the management costs for halting wetland burning through implementation of local bylaws and community awareness. Regulation of illegal fishing, sand mining and pollution of wetland are within the local bylaws but require separate enforcement actions through community committees and paid workers who provide surveillance and report, and facilitation of local police to provide back up support to the community ecotourism. It should be noted that the communities work with private sector partners and have a partnership where a percentage of the revenues obtained is taken by the communities (usually 20 to 40%).

Table 10: Projected costs (UGX/ha) for wetland system management for ecotourism purposes

OUTCOMES	Projected costs (UGX/ha)									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1.Tourism development and Promotion	25,887	27,800	29,713	31,626	33,539	35,452	37,365	39,278	41,190	43,103
2.Burning of wetland stopped	13,033	14,034	15,035	16,036	17,037	18,038	19,039	20,041	21,042	22,043
3.Mabamba catchment forested	12,944	13,900	14,857	15,813	16,769	17,726	18,682	19,639	20,595	21,552
4.Illegal Fishing Controlled	9,775	10,526	11,276	12,027	12,778	13,529	14,280	15,030	15,781	16,532
5.Regulated Resource harvesting	25,887	27,800	29,713	31,626	33,539	35,452	37,365	39,278	41,190	43,103
6.Sand mining & Pollution of the wetland Controlled	13,112	14,160	15,208	16,256	17,305	18,353	19,401	20,450	21,498	22,546
Annual Total	**110,297**	**123,155**	**136,013**	**148,871**	**161,729**	**174,587**	**187,445**	**200,303**	**213,161**	**226,019**

Source: Nature Uganda (2014)

Results of the break-even analysis, conducted to establish the threshold of viability, show that if each of the eight ecotourism sites individually averaged 27,356 visitors per year or altogether the eight ecotourism sites received 218,842 visitors/year, the investment in ecotourism would be viable (Table 11). The viability of the investment is based on the assumption that the average expenditure per tourist or visitor is UGX 112,500/ visit, irrespective of whether they are national residents, forest residents or foreign non-residents. The discount rate for benefits and the compounding rate for costs were both set at 12% (MFPED 2018).

Table 11: Threshold of viability for implementation of the ecotourism finance solution

Description	Total amounts in billion UGX										Total
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
Discounted Total costs	10.2	11.4	12,6	13.8	15.0	16.2	17.4	18.6	19.7	20.9	**155.8**
Discounted Total benefits	24.6	22.0	19.6	17.5	15.6	14.0	12.5	11.1	9.9	8.8	**155.8**
Average Price ($30/ visitor) ($1=UGX 3750)											**112,500**
Aggregate Number of visitors											**218,842**
Average number of visitors for the 8 sites											**27,356**

An assessment of tourism value as part of the ecosystem service valuation for Budongo central forest reserve, Murchison Falls National Park and Semuliki National Park found that average the modal payment by visitors was $35 (UGX 129,500) per visitor and the wetland systems with developed tourism activities e.g. Mabamba wetland system, Lutembe Bay wetland system and Lake Nabugabo wetlands average over 30,000 visitors per year. Therefore, the investment in the ecotourism activity would be feasible. Community management action plans can guarantee communities sustainable access to fisheries, water supply, papyrus, and other sustainably harvested products. The ecosystem service value for products obtained by communities are estimated at about $3,000/ha of wetland system (Kakuru et al. 2013).

3.5 Upgrading the value chain for organic agriculture, natural ingredient, cosmetics and pharmaceuticals

3.5.1 The finance solution

The finance solution seeks to upgrade the shea butter and organic agriculture value chains. The finance solution for shea butter involves three actions, improved collection of shea nuts, improved maintenance of trees through tending and long-term enrichment planting, as well as improved processing and marking of shea nuts and shea butter to enhance revenue. By increasing the value earned shea can be conserved and incentives will be created for communities in northern Uganda to undertake sustainable management and use actions for valuable biodiversity. In absence of alternative valuable use trees such as shea and acacia Senegal (for Gum Arabica) are harvested for wood production. Woodlands are the most vulnerable form of forest estate to deforestation for fuelwood in Uganda. Even though bylaws have been developed to protect valuable tree species, additional incentives are needed to change the mind-set of the Indigenous Peoples and Local Communities (IPLCs).

Uganda has an extensive shea butter belt in northern Uganda. Potential levels of Shea nut production in the Ugandan shea ranges between 70,000 and 385,000 metric tonnes, or 15 to 80 million litres of oil using traditional methods value at $30 million. But currently exports stand at 3 metric tonnes of shea nut butter equivalent $21,000 (UGX 77 million) per week equivalent to $1.09 million/year of shea product exports/year (UEPB 2018). Moreover, Uganda grows the *Vitellaria nilotica* variety of shea nut which is preferred by cosmetics firms due to its higher olein fraction (i.e. the Ugandan sample had a 59% oleic acid content compared with 47% for Nigeria and only 39% for Burkina Faso (Ferris et al. 2001). With improved collections, management of shea trees, processing technology and marketing shea butter oil production can be increased to 120 million litres leading to two to three-fold increase in export value to $60 to 90 million (NEMA and UNDP 2018). The limited press technology capacity and poorly developed value chain

and market structure means that Uganda loses between $59 to 89 million/year of the value that can be captured in the shea nut/oil value chain (NEMA and UNDP 2018; UEPB 2018).

With regard to organic agriculture, the National Organic Agriculture Movement of Uganda (NOGAMU) in 2016 indicated that the country receives orders of at least $300 million every year. Even though Uganda's organic agriculture exports have grown from $4.6 million/year in 2002/03 to $55 million by 2015/16, the progress is still too slow. Uganda has the largest number of certified organic agriculture farmers in Africa (190,000) and the second largest area under organic (231,157 ha) on the continent (NOGAMU 2016). More importantly, Ugandan farmers generally produce with little external input and generally prefer organic agriculture production (Lustig 2008[4]). The key constraints to organic agriculture in Uganda are related to: (a) production, (b) market access and marketing, and (c) institutional and policy-related issues. In the absence of institutional and policy support, the smallholder farmers bear a high cost of organic certification, and conversion at farmer level. The efforts to enhance market access are fairly successful in recent times, but the farmers are unable to obtain the economies of scale from the premium due to small size. The finance solution seeks a threefold increase in the area of certified organic agriculture, and policy and institutional support to lower operation costs through public support in organic certification, and maintenance of current market

3.5.2 Proposed Actions

a) Shea nut and Shea oil/butter

The two key interventions proposed that can enhance the performance are: (i) upgrading press technology and increasing access of this technology close to farmers, and (ii) the supply side performance of shea nut collections through maintenance of trees, and regular collections and access to buyers of the shea nuts.

The extraction efficiency increased from about 12.6% to about 25% of the oil extracted (NEMA and UNDP 2018). The shea oil content is estimated at 41-45% (Okullo et al. 2010) therefore extraction efficiency can improve quantity of shea produced.

b) Organic agriculture[5]

The proposed interventions for the organic agriculture sector will first be: (i) support development of enabling conditions comprising of a policy and enabling environment; (ii) financing support to the value chain for farmers with capacity to expand current production or increase number of farmer, and processors with capacity to increase processing and traders with export deficits. Government through policy and institutional support, and extension will support expansion of organic agriculture land three fold from 231,157 ha (2016) to 693,471ha by 2027/28. The additional production realised will require improved value addition, marketing costs, and certification and conversion costs, as well as the opportunity cost of current production for farmers who switch. The gains from organic agriculture include improved farm management practices which also benefit the conventionally managed farms, i.e. Good Agriculture Practices of records keeping, tracing all inputs used, booking keeping and social inclusiveness such as farm hygiene and the improved welfare of workers.

3.5.3 Feasibility of finance solution

a) Shea nuts and Shea Butter

Partial budget analysis conducted for the shea nut/shea butter value chain shows improvements from the current net annual revenues of $198,600 to $824,577, $15.7million, $13.1 million under three alternative scenarios (Table 12). The three alternative scenarios respectively are Scenario 1: Increase oil seed collections

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5 Note sometimes Shea is categorized as an organic product, oil crop or organic oil crop. However, it is considered separate from the organic products, in this context.

and maintenance of shea trees and processed oil exported, Scenario 2: Improved collections, restoration and improved processed oil exported and Scenario 3: Increase oil seed collections and maintenance of shea trees and improved processed oil exported. Scenario 2 had the highest net benefit of $15.7 million because it was focused on increasing processing and export of processed shea butter/oil and improved access to the local market.

Scenario 3 seems most favourable as it is focused on maintenance and expansion of area under collection as well as a steady increase in shea nut seed collections and improved processing for the domestic market and export. Scenario 2 is focused on modest improvements through restoration, improved processing and sale of shea nuts and processed shea butter/oil exported. The partial budget analysis points to increased profitability and make the finance solution sound for a private sector intervention supported through upgrading the value chain.

Table 12: Partial Budget analysis for Shea butter value chain upgrading

Description of costs and benefit cycles	Baseline status (2018) Shea nut processed for oil and oil exported	Scenario 1: Increase oil seed collections and maintenance of Shea trees and processed oil exported	Scenario 2: Improved collections, restoration and improved processed oil exported	Scenario 3: Increase oil seed collections and maintenance of Shea trees and improved processed oil exported
	Current collections (2018)	Projected collections (2028)	Projected collections (2028)	Projected collections (2028)
Area	7,117.9	100,000	200,000	100,000
Shea nut yield (Mt/ha)	0.13	0.13	0.13	0.13
Shea nut production (Mt/year)	936	26,300	39,450	26,300
Shea nut processed for export (Mt/year)	486	13,150	13,150	6,575
Price of Shea nuts seed $/tonne	600	600	600	600
Sub-total value of seed	**291,600**	**7,890,000**	**7,890,000**	**3,945,000**
Processed oil current yield (333kg/Mt of Shea nut), MT	3	438.29	5,917.5	2,958.75
Export Price $/tonne	7000	7000	7,000	7,000
Sub-total $	21,000	3,000,000	41,422,500	20,711,250
Local Market sales	30	300	300	300
Export Price $/tonne	4000	4000	4000	4000
Local value	120,000	1,200,000	1,200,000	1,200,000
Total Value	432,600	12,090,000	50,512,500	25,856,250
Costs		52		
Farm gate costs based on current production prices $/tonne (production) $250/tonne	234,000	6,575,000	9,862,500	6,575,000
Restoration costs			16,891,891	
Tree maintenance costs		4,229,973	4,229,973	4,229,973
Upgrading processing and refinery		1	4	2
		300,000	1,200,000	600,000
Upgrading quality assurance		100,000	100,000	100,000
Added marketing costs		60,450	2,525,625	1,292,813
Total costs	**234,000**	**11,265,423**	**34,809,989**	**12,797,786**
Net Annual Revenues	**198,600**	**824,577**	**15,702,511**	**13,058,464**

b) Organic agriculture

Partial budget analysis for the organic agriculture value chain upgrade shows the results of integrating economies of scale by expanding area under production, and public sector interventions on certification costs, and maintaining good access to export markets. The net benefits obtained from the three-fold expansion and public support was $85.7 million/year (Table 13) as additional earnings in addition to the documented $55 million/year.

Table 13: Partial Budget analysis for organic agriculture expansion

Description of categories of costs/benefits	Costs ($)		
	Current costs	Added costs	Reduced costs
Area	231,157	462,314	462,314
Costs			
Establishment costs up to first harvest (18 months)	619	309	309
Annual maintenance costs ($/year)	0	0	0
Certification costs (Average annual cost) $/ha/year, average 2.34 ha	128	43	85
Total $/ha/year	746.67	352.33	394.33
Amount	172,597,227	162,888,633	182,305,821
Gross added costs			**19,417,188**
Benefits			
		Added benefits	Reduced benefits
Added export value		110,000,000	
Current crop income lost			43,732,405
Amount		110,000,000	43,732,405
Gross benefits			**66,267,595**
Net benefit			**85,684,783**

Sources: adapted from NOGAMU 2018;

3.6 Rationalise and implement revised charge systems for biodiversity and ecosystem conservation and management

3.6.1 Introduction

Uganda environmental policy reforms generally occurred between 1994 and 2003. Biodiversity and ecosystem conservation/management laws were formulated in the order of the National Environment Act Cap 153 (in 1995), Wildlife Act Cap 200 (1996), the Water Act Cap 152 (1997) and the National Forestry and Tree Planting Act (2003). The key regulatory instruments that contain schedules of the charge, licensing and permit systems critical to regulation of biodiversity and ecosystem use include:

(i) National Environment (Access to Genetic Resources and Benefit Sharing) Regulations 2005
(ii) The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, No. 3/2000)
(iii) Local Government Act Cap 243 (1997), departmental revenue:
   a. Fees from sustainable wood production and processing
   b. Fees from sustainable wetland use
   c. Fees from environmental compliance for extractive activities (e.g. sand, gravel, stones, etc.) and fines and charges for poor waste management

The finance solution seeks to rationalise and redesign the charge systems to reflect the current cost of biodiversity and ecosystem management. The instrument rates were generally fixed amounts based on the prevalent compliance challenge at the time. For example, between 1999 and 2000 when the regulations and instruments were developed the Uganda shilling's dollar exchange rate was $1 to UGX 1,000 – 1,200. Currently, the Uganda shilling's dollar exchange rate stands at $1 to UGX 3,740 – 3,780 (Bank of Uganda, November 2018). Moreover, given that the Government operates an inflation target of about 5% per annum, and an economic discount rate of 11% (MFPED 2018), the charge rates need to be revised regularly to reflect economic conditions. Other factors to be considered in the feasibility assessments are the change in size of resource, and current livelihoods associated with the ecosystem services.

3.6.2 Proposed Actions

1. Rationalise and revise charges

1) Conduct technical studies to establish cost recovery, the value of biodiversity and ecosystem services, the remedial and social welfare costs/ opportunity cost of using biodiversity and ecosystem services.
2) Undertake weighting of the use rates and the appropriate fees levels. The weighting or calibration fees should be consistent with sustainability principles such as the polluter pays and user pays principle but should also apply principles such as no-net loss of biodiversity.
3) Design revised schedules, fees structure, instruments and guidance, among others in line with requirements of the regulations NEMA (2016).

2. Pilot the new charge system and scale out based on success of pilots.

All eight instruments will be piloted for at least one year. The piloting and subsequent review will allow for integrating of stakeholder concerns and conditions on ground. Proposals will then be made to adopt the revised charge systems in the revised regulations and/or schedules.

3.6.3 Feasibility of the finance solution

The benefit cost analysis conducted for developing the five charges and/or economic instruments showed a discounted net benefit of $22.4 million, equivalent to UGX 83 billion, over the course of the nine-year project (Tables 14). The benefit cost ratio obtained was 3.17. Therefore, the finance solution can be considered robust with a buffer of 217% above the breakeven threshold.

Table 14: Net benefits for rationalising and implementing revised charge systems for biodiversity and ecosystem conservation and management

Action	Aggregate Amount in million UGX	Aggregate Amount in million $
Discounted Benefits	38,295	10.35
Discounted costs	121,323	32.79
Discounted Net Benefit	83,028	22.44
Benefit Cost Ratio		3.17

3.7 Financing model for biodiversity conservation for central forest reserves

3.7.1 The finance solution

According to the NFA Strategic Plan 2015 – 2020, the NFA's financial performance in the previous Strategic plan was rated at 31.5%. The financial performance assessment reflects inadequate funding for CFRs. Out of the financial forecast for the Strategic Plan (2009 – 2014) of UGX 292.7 billion, only UGX 91.9Bn (31.3%) funding was realised. Funding was obtained from the Development partners and Non-Tax Revenue (NTR). However, due to change in priorities of the partners, grants/donor funding reduced, this forced Government to increase funding of the NFA by taking up the wage bill and introducing a Community Tree Planting Program. The 2015 – 2020 Strategic Plan was built on a similar approach as the previous strategy. Non-Tax Revenues (NTRs) are expected to generate the bulk of financial resources 55.6% while Government of Uganda support is expected to be 20.36% and donors 19.13% of the projected aggregate budget of UGX 199.12.

Out of the remaining 1.83 million ha of forest estate in Uganda, 504,391 ha (27.6%) are central forest reserves (CFRs) under the management of the National Forestry Authority (NFA). Central forest reserves are Uganda's prime forest estate with 14.4% (73,000 ha) as forest plantations and 85.6% (431,391 ha) as natural forests. The natural forest reserves contain the country's natural tree germ plasm, and other forest biodiversity including chimpanzees, birds and forest elephants, among others. The Forest Investment Plan (MWE 2017), the Forest Landscape Restoration (FLR) opportunities assessment and the Reduced Emissions from Deforestation and forest Degradation (REDD+) have all urged for a cessation of natural forest harvest

in CFRs in order to protect the prime forest estate. On the one hand, the urgency to protect the prime forest estate is high on the other hand, the funding for maintenance and management of the same forest estate is declining and rate at less than one-third of the required resources.

The finance solution seeks to mobilise optimal financing for conservation of biodiversity as well as shift the paradigm of raising funds for the management and maintenance of Uganda's prime forest estate from continued reliance on wood harvest to investments in ecotourism, bio-prospecting, payments for ecosystem services and value chains for non-wood forest products.

3.7.2 Proposed Actions

1. Develop a revised business plan for management of central forest

Conduct a feasibility analysis of the proposed financing alternatives for NTR including scaling up ecotourism activities, bio-prospecting, supply of non-wood forest products and payments for ecosystem services. Technical efficiency analysis (using production function and ecosystem supply projections) and economic efficiency analysis (based on cost-benefit analysis) will be undertaken.

Undertake business planning for the feasible and viable package of ecotourism, bio-prospecting, payments for ecosystem services and PES, and value chains for non-wood forest products across the seven forest landscapes in the country (Northern Moist, Karamoja, Afro-montane, Lake Victoria Crescent, Southeast L. Kyoga Floodplains, Southwest Rangelands and the Western Mid-Altitude (MWE/NFA 2016)). Forty-seven priority CFRs were selected in preliminary planning with the NFA. The 47 CFRs represent the prioritised CFRs out of 506 CFRs in the country, and by landscape.

2. Pilot the revised business plan and review and reinforce performance

The revised business plan will be piloted for at least three years. The financial revenue plan would be used to scale up successful options to cover all the CFRs in the country. The financing plan would also offer viable financing solutions for restoration, management and maintenance of natural forests on private land.

3.7.3 Feasibility of the finance solution

The economic viability of developing a financing model for biodiversity conservation in Uganda's central forest reserves was assessed based on financial and economic analysis of the FLR opportunities in the country (MWE and IUCN 2018). The discounted benefits per hectare show that over a nine-year timeline, investment in ecotourism, ecosystem services and the stewardship ecosystem service benefits of communities adjacent to the central forest reserve were UGX 28million/ha, equivalent to $7,633/ha (Table 15). If averaged over the project timeline the net benefits would be equivalent to UGX 3.5 million/ha/year ($954/ha/year).

Table 15: Discounted net benefits for financing model for biodiversity conservation for central forest reserves

Description of aggregates	Aggregate amount in '000 UGX	Aggregate Amount $
Discounted benefits	175,394	47,404
Discounted costs	147,152	39,771
Discounted net benefits	**28,242**	**7,633**
Benefit cost ratio		**1.192**

3.8 Standardize and regulate implementation of biodiversity offsets

3.8.1 Introduction

Since 2005, biodiversity offset, when the Kalagala offsets were developed as part of the Bujagali Hydro Power Plant, are increasingly used as part of environmental compliance for infrastructure projects of hydropower projects and read construction, among others. One-off offsets have been developed for several hydropower projects or power lines and now oil and gas projects in the Albertine Rift and the Albertine Graben (UETCL 2018; MEMD 2018). Biodiversity offsets are implemented to cater for residual impact of environmental compliance through environmental social impact assessment (ESIA), as part of the environmental mitigation hierarchy. Whereas the biodiversity offset, particularly one off, offsets, have gained traction for NEMA and the authority has realised that both the design and implementation of the offsets easily falls below national expectations of environmental compliance. In many cases, the biodiversity offsets are treated as additional revenue and used in administrative, operational and human resource expenditures, infrastructure developments have occurred in areas overlapping offsets leading to conflict between the Government and the agencies that funded the offset.

As part of implementing biodiversity offsets as included in the National Environment Act No. 5 of 2019, the finance solution seeks to develop clear regulations, guidelines and pilot a system of implementing biodiversity offsets that is standardised and meets the national strategic environment and natural resource management, development and conservation needs. This will streamline obligations of different actors, minimise conflict over offsets, and ensure that no net biodiversity loss occurs as part of the offsetting process.

3.8.2 Proposed Actions

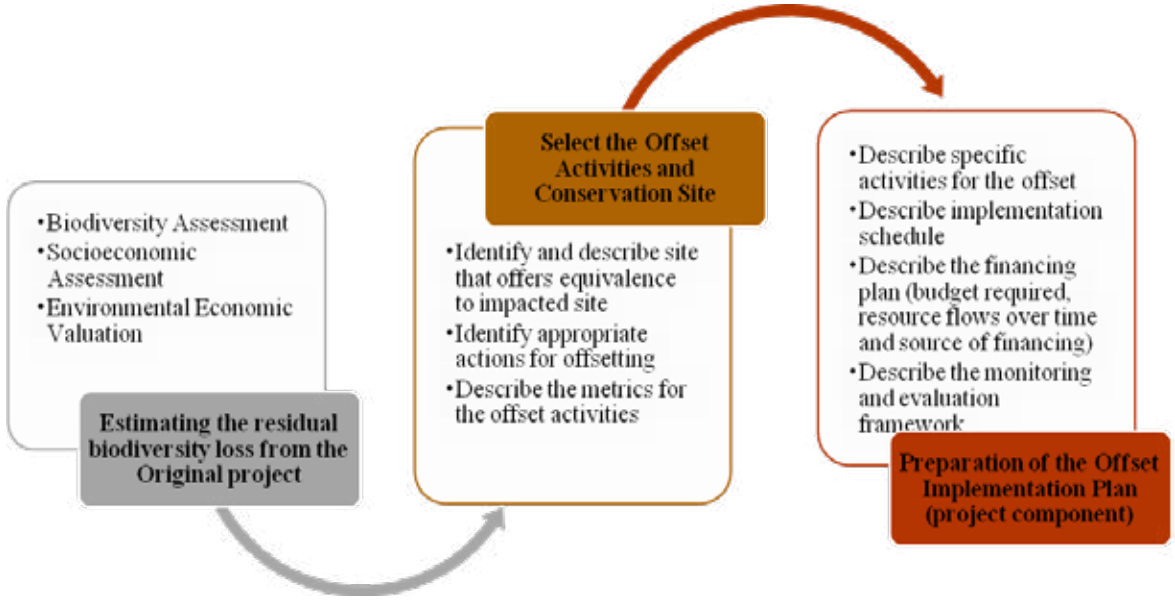
1. Review strategic environmental assessments (SEA)

Conducting strategic environmental assessments (SEA) for wetlands, central forest reserves and national parks and wildlife reserves that lie within the large scale development or highly settled areas in the country. The SEA will show that the areas' most vulnerable to land use change and environmental damage as a result of planned development. The development strategies to be considered in the SEA include; the oil and gas development, transport master plan, industrial development master plan, the Greater Kampala Metropolitan Area (GKMA) strategic plan, and the electricity generation and transmission strategic plans among others. The sea will show the biodiversity and ecosystems under risks of use change or damage and areas where future offsets can be undertaken. Critically the SEA will be able to show the mitigation hierarchy would eventually reduce the environmental impact as well as residue cost.

2. Design of biodiversity offsets and the offsetting planning and recommend offset rates for established systems earmarked for strategic investments or use

Flow Process of implementation arrangements for designing and implementing biodiversity offsets comprises of four steps. The first step is the design step. It involves estimation of the residual biodiversity loss both in qualitative, quantitative and monetary terms (Figure 6).

Figure 6: Flow process for design and implementation of biodiversity offsets in Uganda



Source: adapted from Forest Trends (2013); UETCL (2018)

The step of designing biodiversity offsets comprises specific spatial considerations, social economic factors, social-political and socio-cultural considerations. The result is an indicative offset rate for the three systems under consideration. The offset also integrates the specific features of spatial considerations, social economic factor, sociocultural and socio-political factors.

3. Pilot national park and wildlife reserves, central forest reserves and wetland offsetting and guidelines for biodiversity offsetting

Wetland offset of the GKMA will be piloted in line with the government of Uganda road map on wetland restoration in the country. The offset rate developed will be piloted for the Lake Victoria Basin wetland and later wetland offset will be scaled up to wetlands already impacted and/or at risk of degradation and damage due to development activities.

Guidelines for biodiversity offset will be integrated into the plans of the different sectors (MALGs) whose activities include either management of forests, wetlands, national parks and wildlife reserves and those whose activities impact on biodiversity and ecosystems. The integration of guidelines consists of training activities and ownership which often requires developing sector specific guidelines to compliment the national guidelines.

3.8.3 Feasibility of the finance solution

The discounted net benefits were estimated as UGX 17.8 billion equivalent to $ 4.81 million over the nine-year timeline of design and piloting standardised biodiversity offsets (Table 16). The benefit cost ratio obtained was 3.24. Therefore, the discounted benefits of the finance solution have a 224% buffer above the discounted costs. Therefore, the viability of the finance show is robust and can withstand changes moderate to medium changes in biophysical performance of the ecosystem and ecosystem services obtained.

Table 16: Discounted net benefits for standardizing and regulate implementation of biodiversity offsets

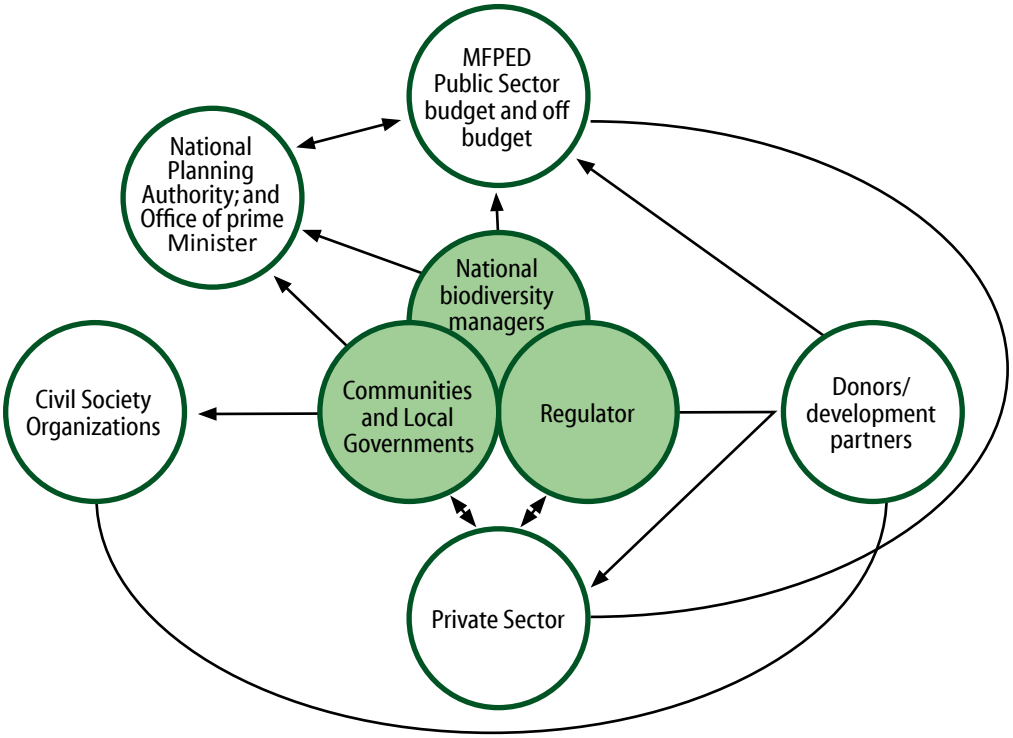
Aggregates of discounted net benefits	Aggregate in UGX millions	Aggregate amount $ million
Discounted Net benefits	17,785	4.81
Discounted total costs	25,727	6.95
Discounted Net benefit	17,785	4.81
Benefit-cost ratio		3.24

4. ACTION PLAN AND FINANCIAL REQUIREMENT

4.1 Governance plan and institutional arrangements

Leadership for resource mobilisation for biodiversity conservation and management in Uganda lies with the Ministry of Finance Planning and Economic Development (MFPED). In the coordination and implementation the governance of the NBFP comprises an overlap of some functions and respective leadership on implementation of restoration and maintenance actions, generation of financial resources and maintenance of a National Biodiversity Mitigation Banking system between NEMA, Ministries, Agencies and Local Governments (MALGs). NEMA, the lead regulator, coordinates implementation and manages the monitoring, reporting and verification processes (Figure 7). The instruments to be implemented are shared by the core, often with overlapping roles for the core institutions.

Figure 7: Governance framework for the NBFP



Accountability for implementation of the NDPII and the UGGDS is the role of the National Planning Authority (NPA). The office of the Prime Ministers monitors and determines national indicators of performance for all Government programmes, including many components of the NBFP. The outer axis comprises, funding institutions, which on their own have governance mechanism which have to be integrated into the governance system of the core institutions and the other partner institutions.

Management of public finance is conducted by the MFPED, which also the focal point for resource mobilisation, and the overall lead agency for implementing the NBFP. Donors contribute to on-budget and off budget financing, while CSOs both implement and finance the NBFP. Private sector has a role as an investor in enterprise components of biodiversity and ecosystem services use, through compliance to biodiversity management, and financial contributions through donations and/or corporate social responsibility (CSR).

The institutional arrangements change from one finance solution to another. Table 17 shows, the proposed institutional arrangements comprising the lead institutions on

Table 17: Institutional framework for implementing finance solutions

Finance solution	Lead institution					Financing innovative instrument
	Implementation			Financial Management	MRV	
Type of institution	*Public*	*Private*	*CSO*	*Public*	*Public*	
1 A national biodiversity and ecosystem index and biodiversity fiscal transfers.	NEMA NFA MWE UWA LGs	PSFU	WS WWF IUCN	MFPED NEMA UWA NFA	NEMA UWA MWE NFA	A biodiversity & ecosystem index Biodiversity Fiscal Transfer
2. A national programme on payments for ecosystem services	NEMA	PSFU	ECOTRUST IUCN WWF	Joint national PES committee NEMA, PSFU and CSO representative	NEMA ECOTRUST WWF IUCN	National Biodiversity Mitigation Banking System for public (part of NEF) UBTC for private sector and CSOs
3. Scaling up bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model	LGs NEMA	USSIA	IUCN CARE	MFPED DLGs	MWE NEMA	Biodiversity fiscal transfers Regulatory reform based on Environment Act (2018), District ordinances & bylaws
4. Upgrading the ecotourism value chain for Ramsar sites and Kampala city and Mbarara municipality	MWE MTWA	PSFU	Nature Uganda	MTWA	NEMA	Public – Private – Producer – Partnerships (4Ps) Community ecotourism action plan
5. Upgrading the value chain for organic agriculture, natural ingredient, cosmetics and pharmaceuticals	NEMA MAAIF MTIC UEPB	UWA USSIA	NOGAM IUCN	NEMA MAAIF MTIC	UEPB MAAIF	Subsidy for organic certification 4 Ps (for production, processing and export)
6. Rationalise and implement revised charge systems for biodiversity and ecosystem conservation and management	NEMA Local government	USSIA	IUCN ECOTRUST	NEMA	NEMA Local Government Finance Commission (LGFC)	National biodiversity mitigation banking system Local government biodiversity fund
7. A financing model for biodiversity conservation for central forest reserves	NFA LGs	UTGA (leakage)	WCS ECOTRUST WWF	NFA/MWE	NFA NEMA UWA DLG	Revised national forest business plan
8. Standardize and regulate implementation of biodiversity offsets	NEMA UWA NFA MWE	PSFU UWA USSIA	WCS Nature Uganda Ecotrust	NEMA MFPED	NEMA MWE UWA NFA	National biodiversity Mitigation Banking System/NEF

4.2 Enabling conditions

4.2.1 Establishment of a National Biodiversity Mitigation Banking system

The Government will establish a National Biodiversity Mitigation Banking system.The hybrid system will have both voluntary and regulated biodiversity mitigation credits that will be used for achieving biodiversity no net loss for projects with significant impacts on biodiversity conservation. Biodiversity damaging entities will be able to offset their damage by acquiring credits from entities that have invested in biodiversity conservation, and some entities will be able to obtain public and private credits including payments for investment in biodiversity conservation. The national biodiversity mitigation banking platform will be established based on regulations and guidelines to be developed as part of the implementation of the National Environment Act 2018. The national biodiversity banking platform will provide project developers and communities to turn biodiversity into an asset instead of a liability. The biodiversity mitigation

banking system will provide an opportunity for communities, private sector and public agencies to invest in biodiversity conservation to support the biodiversity conservation mitigation requirements of project developers as part of implementation of environmental compliance.

The Government biodiversity banking platform will be managed as an additional window of the National Environment Fund. The platform will support regulated compliance actions of project developers as well as national biodiversity assets that are critically endangered as a result of public projects, particularly infrastructure development activities.

The Government will support the development of private sector biodiversity banking platform managed by selected Civil Society Organisations (CSOs) and funds. However, these private sector platforms will be regulated by Government.

Government regulation will include among others:

(a) Setting and/or regulation of the price paid for mitigation banking;
(b) Ensuring that critical biodiversity resources are not included in the mitigation banking platforms;
(c) Protection of the rights of Government, communities, and individuals who may lose out from the investments into biodiversity conservation by public and private agencies;
(d) Fining those who damage the ecosystems (through endangered species laws, for instance) or by paying those who conserve it (providing tax breaks or subsidies for conservation, for example);
(e) Providing regulatory support for voluntary transactions set the price, e.g. voluntary biodiversity offsets.
(f) Establish sustainable thresholds of biodiversity mitigation banking and conservation or protection of biodiversity.

4.2.2 Regulatory, institutional and policy reforms

In November 2018, the Parliament of Uganda passed a new law that will support the implementation of the NBFP. Implementation of the new law will require development of several regulations including regulations on biodiversity offsets and a national PES programme, among others. These reforms will require adjustments in institutional practice policies for biodiversity management, and institutional reforms including human resources and technical capacity enhancement to support effective implementation of the NBFP. New regulations are expected on:

a) National biodiversity and ecosystem index to inform ecological fiscal transfers
b) National payments for ecosystem services programme
c) bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model
d) charge systems for biodiversity and ecosystem conservation and management
e) implementation of biodiversity offsets

4.2.3 A public-private sector engagement platform on biodiversity

The Government through the National Planning Authority (NPA) and NEMA, NGOs such as the Wildlife Conservation Society (WCS), the International Union for Conservation of Nature (IUCN) and Nature Uganda, as well as private partners including Total ENP, and academia including Oxford University and Makerere University initiated a biodiversity platform. The NBFP will scale-up the platform to include national private sector umbrella organisations including the Private Sector Foundation Uganda (PSFU) Uganda Manufacturer's Association (UMA), Uganda Small-scale Industries Association (USSIA) and Uganda Bankers' Association (UBA), among others. Several other national and international NGOs will be invited to the platform including the World Wide Fund for nature (WWF), Advocates Coalition for Development and Environment (ACODE), Environment Conservation Trust (ECOTRUST) Uganda and Environmental Alert, among others.

The public-private sector engagement will create a platform for balancing minimisation of business risks such as operational risk; (ii) reputational risks; (iii) regulatory and legal risks; and (iv) financial risks related to biodiversity and ecosystems with the need to ensure optimal biodiversity conservation and management

in the country. Proposed actions will include establishment of a secretariat and a national public-private biodiversity forum. Establishment of a fund for research that can support both biodiversity management compliance and improved performance of private sector with minimal impact on biodiversity.

4.2.4 Knowledge networks for biodiversity management and conservation

The existing networks for biodiversity conservation and management information are linked through the Clearing House Mechanism (CHM), the National Biodiversity Databank, and the NBSAP and national reporting process, as well as committees for implementation of biodiversity projects. The national knowledge network needs to be strengthened largely because results of ongoing activities including research, and lessons learned from practice and policy reforms are not used. Implementation of projects on enhancing biodiversity knowledge networks showed poor coordination and many quality limitations in the knowledge available. Moreover, a lot of the knowledge generated locally is not used in development and/or implementation of projects (NEMA-CONNECT Project 2018). Knowledge networks will be developed by enhancing the capacity of the CHM to collate research and knowledge, annual outreach activities with Indigenous Peoples and Local Communities (IPLCs), and a national conference on knowledge networks for biodiversity conservation.

4.2.5 Capacity building to develop and implement feasible and viable biodiversity and ecosystem conservation management projects

To effectively develop and implement actions that can lead to sustainable biodiversity and ecosystem management, as well as tap into the finance solutions proposed capacity is needed in areas of impact assessment and feasibility/viability assessment, appropriate and adequate capacity is needed. The proposed capacity building will be undertaken as a sub-component for implementation of all the developed finance solutions. The stakeholders targeted for training will be based on the stakeholder categories in the NBSAPII.

4.3 Resource mobilisation strategy for implementation of the plan

The resource mobilisation strategy is summarised in Table 18 below. The financial requirements for developing the finance solution are generally the lowest of the three costs which also include piloting and scaling up the finance solutions. The resource mobilisation strategy proposed four main sources of financing, support from donors and government through grants and/or budgetary and non-budget support, own revenue mobilised from non-tax revenues, revenues mobilised for biodiversity conservation and stored in the different biodiversity funds, particularly the National Biodiversity Mitigation Banking System that will be integrated as window of the National Environment Fund (NEF) in NEMA. Private sector will provide finance through investments under the innovative public-private-producer partnership (4Ps) (IFAD/MAAIF 2017). The 4 Ps innovation emerged because many times, the Indigenous Peoples and Local Communities (IPLCs) continue to have a stewardship and ecosystem services access to biodiversity. There is a risk that a public-private partnership may push local stewards out of the biodiversity and ecosystems as they are not part of the memorandums of understanding. Under 4 Ps the IPLCs are part and parcel of the sustainable development and use of biodiversity to mobilise additional financing for biodiversity management.

The largest financial requirement will be towards scaling up of the financing solutions. At least six out of the eight finance solutions will generate their own revenue either as NTR or funds kept in a fund. Therefore, in the long-term the finance solutions will be able to set aside funds for maintaining the operations of the finale solutions, in addition to continue to mobilise funds from biodiversity fiscals, donor support and international biodiversity conservation and management funds, among others.

Table 18: Required funds, available funds and suggested sources of funds for implementing the BFP

Finance solutions	Phases of implementation		Financial requirement ($ million)	Resource mobilization strategy	Source of funds
1 A national biodiversity and ecosystem index and biodiversity fiscal transfers.	Finance solution development		0.30	Donors and non-tax revenues of NEMA, MWE and local revenue for local governments	Grants and own revenue
	Piloting solution		0.24	Biodiversity Fiscal Transfers and Development partners	Grants - international biodiversity conservation funds
	Scaling up solution, 6 years		19.93	Funds from the National Biodiversity Mitigation Banking System, and Biodiversity Fiscal Transfers	Own revenue and grants
2. A national programme on payments for ecosystem services	Finance solution development		0.18	Donors and non-tax revenues of NEMA. Contributions of CSOs.	Grants and own revenue
	Piloting solution		0.24	Non-tax revenues of NEMA, NFA and MWE. Contributions of CSOs.	Own revenue and CSO support
	Scaling up solution		13.52	Funds generated from PES kept in a PES Fund window in the National Biodiversity Mitigation Banking System of the National Environment Fund	Own revenue, national PES market, international PES markets
3. Scaling up bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model	Finance solution development		0.26	Biodiversity Fiscal Transfers and development partners	Budget support
	Piloting solution		0.16	Biodiversity Fiscal Transfers and development partners	Budget support
	Scaling up solution		16.83	Biodiversity Fiscal Transfers and National Biodiversity Mitigation Banking System	Budget support. public biodiversity funds
4. Upgrading the ecotourism value chain for Ramsar sites and Kampala city and Mbarara municipality	Aggregate cost (8 years) > 500 ha for economies of scale, per hectare		0.045	Public-private producer partnership. The producers are the communities who will be part of the action plans. Public funds will be mobilized from the National Biodiversity Mitigation Banking System	Private sector investment Public sector investment (own revenue) and community co-funding
5. Upgrading the value chain for organic agriculture, natural ingredient, cosmetics and pharmaceuticals	Shea nut	Scenario 1	11.27	Biodiversity Fiscal Transfers and development partners Public private producer partnership	Budget support and off budget support Private sector investment, biodiversity friendly low cost credit
		Scenario 2	34.81		
		Scenario 3	13.00		
	Organic agriculture	One-time subsidy	19.42	Biodiversity Fiscal Transfers and development partners, private sector investment	
6. Rationalise and implement revised charge systems for biodiversity and ecosystem conservation and management	Finance solution development		0.55	Biodiversity Fiscal Transfers	Budget support
	Piloting solution		2.19	Non-tax revenues of NEMA, MWE and local revenue for local governments	Revenue generated recycled- National Environment Fund, and local government funds
	Scaling up solution		11.23		
7. A financing model for biodiversity conservation for central forest reserves	Finance solution development (per hectare)		0.02	Biodiversity Fiscal Transfers, National Biodiversity Mitigation Banking System, donors	Budget support National Environment Fund
	Scaling up (7 years) (per hectare)		0.03	Funds from the National Biodiversity Mitigation Banking System	Revenue generated recycled
8. Standardize and regulate implementation of biodiversity offsets	Finance solution development		0.86	Biodiversity Fiscal Transfers, donors	Budget and off-budget support
	Scaling up solution, 8 years		2.00	National Biodiversity Mitigation Banking System	Biodiversity Funds

4.4 Work plan for implementing the NBFP

The finance plan will be implemented over the 2019/20 to 2027/28 timeline. The eight finance solutions will be implemented concurrently (Table 20). The development phase of the finance solution is expected to take one to two years, while a one to two-year pilot phase is envisaged. The remaining part of the timeline between six to eight years will be for scaling up the finance solution.

Table 19: Finance solutions, outputs/actions, responsibility and timeline

Finance solution	Phase of implementing		2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
1 A national biodiversity and ecosystem index and biodiversity fiscal transfers.	Finance solution development										
	Piloting solution										
	Scaling up solution, 6 years										
2. A national programme on payments for ecosystem services	Finance solution development										
	Piloting solution										
	Scaling up solution										
3. Scaling up bottom-up enforcement for biodiversity and ecosystem management based on community regulatory systems and incentives model	Finance solution development										
	Piloting solution										
	Scaling up solution										
4. Upgrading the ecotourism value chain for Ramsar sites and Kampala city and Mbarara municipality	Aggregate cost/ha (8 years) > 500 ha for economies of scale	Finance solution development									
		Implementing solution									
5. Upgrading the value chain for organic agriculture, natural ingredient, cosmetics and pharmaceuticals	Shea nut	Scenario 1									
		Scenario 2									
		Scenario 3									
	Organic agriculture	One-time subsidy									
6. Rationalise and implement revised charge systems for biodiversity and ecosystem conservation and management	Finance solution development										
	Piloting solution										
	Scaling up solution										
7. A financing model for biodiversity conservation for central forest reserves	Finance solution development										
	Scaling up (7 years)										
8. Standardize and regulate implementation of biodiversity offsets	Finance solution development										
	Scaling up solution, 8 years										

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ANNEXES

ANNEX I: Process of developing the finance solutions and their appropriateness

The finance solutions were developed through consultative, synthesis and prioritization process with feedback from policy processors and stakeholder consultations. The policy and institutional review provided an indication of the key drivers of biodiversity management and degradation in the country, the policy and practice and details on existing finance mechanisms for biodiversity management in the country. Through a review of the current financing mechanisms and policy and practice of biodiversity management, key issues emerged on the priorities for biodiversity management, and on the financing mechanisms which had the highest potential for enhancing biodiversity management finance in the country. The biodiversity expenditure review showed the difficult associated with conducting an expenditure review in the country. An expenditure review was conducted for the public component of four sectors; agriculture, water and environment, energy and mineral development and tourism, wildlife and antiquities. The finance needs assessment built on the activities of the expenditure review, and established public finance needs for the four key sectors as well as the financial requirements for implementation of Uganda's NBSAP II.

Prioritization of the finance needs was arrived at through a three step process. In the first step all the potential financing mechanisms to address the biodiversity management challenges were listed based on the policy and institutional review and suggestions from stakeholder engagement. A long list of 50 finance solutions was obtained from which a short list of 17 finance solution was used to produce an early draft finance plan. The early draft finance was review by both the national and global BIOFIN teams, and discussed through key informant discussions with BIOFIN technical steering committee, Joint Sector Review of the Water and Environment sector, the top management of the Ministry of Water and Environment. Additional consultations were made with the senior and top management of the National Environment Management Authority (NEMA), and the Project Board meetings hosted by UNDP Country Office. The consultations and prioritization processes led to the final 8 finance solutions.

ANNEX II: Viability assessment for finance solution on developing and implementing biodiversity and ecosystem index and transfers

Cost of developing and implementing biodiversity and ecosystem index and transfers

Costable Action	Unit cost (mill. UGX)	Amount million UGX/Yr.								
		2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Develop Index										
Natural capital accounting External support contract + 25% admin. cost	150	150	300							
Specification of restoration target, Consultation costs		37.5	37.5							
Specification of sustainable use targets, Consultation costs		37.5	37.5							
Determine Responses For Biodiversity And Ecosystem Management										
Complete supply use table, External support contract + 25% admin. cost	93.75	93.75	187.5							
Allocation of responsibility for restoration actions, Consultation costs		37.5	37.5							
Allocation of responsibility for sustainable action, Consultation costs		37.5	37.5							
Develop EFT Guidelines										
Developing and testing of EFT Guidelines, External support contract + 25% admin. cost			75							
Pilot EFT guidelines and restoration and sustainable use of biodiversity and ecosystems										
Restoration costs for forestry (5 districts 400 ha/district)- 5, 10, 20, 30,40,50,60,70, External contract 100ha/ District	1.25			625	2,500	5,000	7,500	10,000	12,500	15,000
Restoration and/ or sustainable use cost for wetlands (40.29ha/district, External contract 40.29ha/ District	1.25			251.83	1,007	2,015	3,022	4,0295	5,0365	6,044
Total		**394**	**713**	**877**	**3,507**	**7,015**	**10,522**	**14,029**	**17,536**	**21,044**
Discounted total		**394**	**642**	**712**	**2,564**	**4,621**	**6,244**	**7,500**	**8,446**	**9,131**

Source: adapted from MWE and IUCN (2018)

Benefit of developing and implementing biodiversity and ecosystem index and transfers

Benefits	Description of effort	Gross ecosystem services UGX million/ha	Amount in UGX millions								
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Forests on private land: Restoration and Avoided deforestation/ degradation (districts 100 ha/district)- 5, 10, 20, 30,40,50,60,70)	THFs (24.5%) of natural forest = 24.5ha/ District/yr	1.8275			894	3,180	7,154	10,731	14,308	17,885	21,462
	Woodlands (78.5%) of natural forest, 75.5 ha/ District/ yr	0.54875			829	3,314	53,031	9,943	13,258	132,578	19,887
Wetlands Restoration and sustainable use (districts 80.58 ha/district)- 5, 10, 20, 30,40,50,60,70	Permanent wetlands	7.0675			2,848	11,390	22,780	34,170	45,526	227,800	68,340
Total			**-**	**-**	**4,570**	**17,884**	**82,965**	**54,844**	**73,092**	**378,263**	**109,689**
Discounted total			**-**	**-**	**4,117**	**14,515**	**60,663**	**36,128**	**43,376**	**202,235**	**52,832**

Source: adapted from MWE and IUCN (2018)

ANNEX III: Viability assessment for finance solution on national payments for ecosystem services programme

Cost cycle for national payments for ecosystem services programme

Costable Action	Effort	Amount (UGX millions)								
		2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Regulatory system										
PES regulation	1	187.5								
PES guidelines	1	93.75								
Capacity building and awareness creation										
Train regulators, DLGs, agencies communities,	1/yr	375								
Engagements with private sector, public sector										
Disseminate information, refine operational manuals Contractual instruments	1/yr		93.75							
Pilot a national PES programme										
Biodiversity of forest protected trees - THFs 98ha/ District/yr, Cost of management products		0	500	1,000	2,000	3,000	4,000	5,000	6,000	7,000
Watershed payments, 80.58 ha/district 1/sub catchment		0	100.7	201.45	402.9	604.35	805.80	10,072.50	1,208.70	1,395.75
Agro-biodiversity and mountain landscape 200ha/ District/year	3 districts /yr	0	210	420	630	840	1,050	1,260	1,470	1,680
Total		**656**	**904**	**1,621**	**3,033**	**4,444**	**5,856**	**16,333**	**8,679**	**10,076**
Discounted total		**656**	**815**	**1,316**	**2,218**	**2,928**	**3,475**	**8,732**	**4,180**	**4,372**

Benefit cycle for National payments for ecosystem services programme

Category	Revenue/Ha (UGX million/ ha)	Area (ha)	Amount (UGX millions)								
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Biodiversity of forest protected trees	UGX 4.2m/ha/ year	98			412	617	823	1,029	1,235	1,441	1,646
Watershed payments	UGX 24.2m/ ha/year	80.58	0	0	2,058	8,232	16,464	24,696	32,928	41,160	49,392
Agro-biodiversity and mountain landscape	UGX 1.07m/ ha/year	200	0	0	6,769	27,075	54,150	81,225	108,300	135,374	162,449
Total			**-**	**-**	**9,238**	**35,924**	**71,437**	**106,950**	**142,462**	**177,975**	**213,488**
Discounted total			**-**	**-**	**7,498**	**26,268**	**47,058**	**63,469**	**76,166**	**85,723**	**92,638**

ANNEX IV: Viability assessment for finance solution on bottom-up enforcement and compliance for biodiversity and ecosystem conservation and management

Cost cycle for bottom-up enforcement and compliance for biodiversity and ecosystem conservation and management

Costable Action	District unit cost ($)	Amount in UGX million								
		2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Rationalize and refine bottom-up system for environmental enforcement and compliance										
Feasibility assessment and design the most feasible bottom-up systems of the institutional External contract/ consultancy contracts, and administrative, supervision costs. 4 national catchments 7 forest management zones7 wetland basins	$75,000	843.75								
Create incentives										
Develop guidelines for biodiversity and ecosystem stewardship	$ 30,000	112.50								
Develop and sign relevant agreements, agreements and MOUs between communities and DLGs and/or MDAs specifying objectives	2,000	0.0	37.5	150	300	450	600	750	900	1050
Scaling up the enforcement and compliance system and incentives										
Scale up enforcement and compliance system: Training & Equipment costs	$5,000 $10,000	0.00	56.25	225.0	450.00	675	900	1,125	1350	1575
Scale-up incentives (commercial office/ Natural resource): Funds for revolving funds & Support for DLGs	96,000,000		480	1920	3840	5760	7680	9600	11520	13440
Total		**956**	**574**	**2,295**	**4,590**	**6,885**	**9,180**	**11,475**	**13,770**	**16,065**
Discounted total		**956**	**517**	**1,863**	**3,356**	**4,535**	**5,448**	**6,135**	**6,632**	**6,971**

NB; scale up 1-5; 2-20; 3-40; 4-60; 5-80; 6-100; 7-120; 8-140

Benefits cycle for bottom-up enforcement and compliance for biodiversity and ecosystem conservation and management

Type of Revenue	Area/ha/ District	Amount in UGX million								
		2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Forest resources										
Revenue from natural forests (THF), 25% of ecosystem services, revenue/Ha - 3,654,574	98 ha	0.00	0.00	269	1,074	2,149	3,223	4,298	5,372	6,447
Natural forest-woodlands, 25% of ecosystem services, revenue/Ha - 1,754196	302	0.00	0.00	265	1,060	2,119	3,179	4,238.14	5,298	6,357
Wetland resources/ catchments										
Avoided cost of wetland degradation, 25% of ecosystem services, revenue/Ha - 11,308,210	80.58	0.00	0.00	1,139	4,556	9,112	13,668	18,224.32	22,780.4	27,336
Total		**-**	**-**	**1,673**	**6,690**	**13,380**	**20,070**	**26,760**	**33,450**	**40,140**
Discounted total		**-**	**-**	**1,358**	**4,892**	**8,814**	**11,911**	**14,307**	**16,112**	**17,418**

THF – 3, 12, 24, 36, 48, 60, 72, 84; **Woodlands** – 2, 8, 16, 24, 32, 40, 48, 56; wetlands scale up

ANNEX V: Viability assessment for finance solution on rationalising and implementing revised charge systems for biodiversity and ecosystem conservation and management

Cost cycle for rationalising and implementing revised charge systems for biodiversity and ecosystem conservation and management

Action	Costable Action	Unit cost ($/instr.)	Amount in '000 $								
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Technical Assessments (5 instruments/ charge systems)	Establish cost recovery, the value of biodiversity and ecosystem services.	50,000	125	125							
Participatory and technical assessment including sociopolitical considerations	Stakeholder consultations at community and political levels	30,000		150							
Design of fees schedule, rationalizing appropriate fees	Design revised schedules, fees structure, instruments and guidance.	30,000		150							
Implementation costs (30% of revenue raised), rest in biodiversity fund	Awareness creation among stakeholders, and set up of payments and monitoring system with banks	25,000			2,188	2,188	2,188	2,260	2,260	2,260	2,260
Total costs			**125**	**425**	**2,188**	**2,188**	**2,188**	**2,260**	**2,260**	**2,260**	**2,260**
Disc. costs			**125**	**386**	**1,808**	**1,644**	**1,494**	**1,403**	**1,275**	**1,160**	**1,054**

Benefit cycle for rationalising and implementing revised charge systems for biodiversity and ecosystem conservation and management

Categories of instruments	Current amount estimate	Amount in '000$								
		2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
National Environment (Access to Genetic Resources and Benefit Sharing) Regulations 2005	$120 per permit, for 200 people per year increasing to 400 after first three pilot years for National Parks, Central Forest Reserves, Wildlife Reserves, Community Wildlife Reserves			240	240	240	480	480	480	480
The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, No. 3/2000	Average charges and fines $50 for at least 8000 people. Based on the developments considered under voluntary audit records			160	160	160	160	160	160	160
Local Government Act Cap 243 (1997), Sustainable wetland management charge system	200 DLGs, average UGX 2.5million, average 10 licenses/year			1,351	1,351	1,351	1,351	1,351	1,351	1,351
Local Government Act Cap 243 (1997), Sustainable forest management charge system	200 DLGs, average UGX 5million, average 15 licenses/year			4,054	4,054	4,054	4,054	4,054	4,054	4,054
Local Government Act Cap 243 (1997), Sustainable environmental management charge system	220 DLGs, average UGX 0.5million, average 50 clients/year			1,486	1,486	1,486	1,486	1,486	1,486	1,486
Total		**-**	**-**	**7,292**	**7,292**	**7,292**	**7,532**	**7,532**	**7,532**	**7,532**
Disc. Benefits		**-**	**-**	**6,026**	**5,479**	**4,980**	**4,677**	**4,252**	**3,865**	**3,514**
Disc. net benefits		-125	-386	4,218	3,835	3,486	3,274	2,976	2,706	2,460

ANNEX VI: Viability assessment for finance solution on model for biodiversity conservation for central forest reserves

Benefit and cost cycle for financing model for biodiversity conservation for central forest reserves

Description of cost and benefit categories	Amounts in UGX'000								
	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Enrichment planting and restoration per ha									
Benefits									
Carbon payments		439	439	439	439	439	439	439	439
Sub-total		439	439	439	439	439	439	439	439
Discounted benefits		395	356	321	289	260	235	211	190
Costs									
Land rent	50	50	50	50	50	50	50	50	50
Field maintenance	1,120	1,120	180	180	180	180	180	180	180
sub-total	1,170	1,170	230	230	230	230	230	230	230
discounted costs	1,170	1,054	187	168	152	136	123	111	100
Ecotourism									
Benefits									
Nature walks		9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Bird watching Game viewing		9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Picnicking and parties		15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Sub-total	0	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000
Disc. benefits	-	29,730	26,784	24,129	21,738	19,584	17,643	15,895	14,320
Cash outflow									
Conducting feasibility studies	8,000								
Marketing costs	400	400	400	400	400	400	400	400	400
Establish of recreational facilities	36,600								
Ecotourism activities	20,000								
Recreation maintenance costs	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Sub-total	77,000	12,400	12,400	12,400	12,400	12,400	12,400,000	12,400	12,400
Discounted costs	77,000	11,171	10,064	9,067	8,168	7,359	6,629,546	5,973	5,381
Implement collaborative forest management initiatives									
Benefits									
Wood fuel - 30 clusters/week @ cluster @ 5000/50 ha		144	144	144	144	144	144	144	144
Honey production 0 hives @ha/ 10 kg/year/ hive@ kg – 5000		500	500	500	500	500	500	500	500
Sub-total	0	644	644	644	644	644	644	644	644
Discounted benefits	-	580	523	471	424	382	344	310	279
Costs									
Agree on MOU	20								
Establishment of buffer forest	1,120								
Establish and facilitate forest stewardship committees	20	20	20	20	20	20	20	20	20
Annual operational costs	96	96	96	96	96	96	96	96	96
Sub-total	1,616	296	296	296	296	296	296	296	296
Discounted costs	1,616	267	240	216	195	176	158	143	128
Aggregate disc. benefits	0	30,705	27,662	24,921	22,451	20,226	18,222	16,416	14,789
Aggregate disc. costs	79,786	12,492	10,491	9,451	8,515	7,671	6,910	6,226	5,609

ANNEX VII: Viability assessment for finance solution on standardizing and regulate implementation of biodiversity offsets

Cost cycle for standardizing and regulate implementation of biodiversity offsets

Costs	Indicator rate $/ ha	Number per year offset activities per year	Amount in $								
			2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Review strategic environmental assessments (SEA	$150,000	3	450,000								
Design of biodiversity offsets and the offsetting planning and recommend offset rates for established systems earmarked for strategic investments or use	40,000	4	160,000								
Pilot national park and wildlife reserves, central forest reserves and wetland offsetting and guidelines for biodiversity offsetting	5,000	50	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Total			**860,000**	**250,000**	**250,000**	**250,000**	**250,000**	**250,000**	**250,000**	**250,000**	**250,000**
Discounted total			**860,000**	**225,225**	**202,906**	**182,799**	**164,683**	**148,363**	**133,660**	**120,415**	**108,482**

Benefit cycle for standardizing and regulate implementation of biodiversity offsets

Description of benefits	Indicator rate $/ ha	Number per year offset activities per year	Revenue saved for biodiversity banking (30%)	Amount in '000$								
				2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
National park and wildlife reserve offsets	16,647.44	10	49,942.32	50	50	100	150	200	250	300	350	400
Wetland offsets	28,649	25	214,868	215	215	430	645	859	1,074	1,289	1,504	1,719
Forest reserve offsets	13,457	15	60,556.50	61	61	121	182	242	303	363	424	484
Total				**325**	**325**	**651**	**976**	**1,301**	**1,627**	**1,952**	**2,278**	**2,603**
Discounted total				**325**	**293**	**528**	**714**	**857**	**965**	**1,044**	**1,097**	**1,129**

Annex VIII: The Technical Steering Committee for the BIOFIN project

No.	Institution	Name	Designation	Task	Email	Cellphone number
1	National Environment Management Authority	Sabino Francis Ogwal	Natural Resource Manager-Biodiversity & Rangeland/ National Project Coordinator	Chairperson	francis.ogwal@nema.go.ug/ sabinofrancis@gmail.com	+256 772 517045
2	United Nations Development Program	Daniel Mcmondo Omodo	Program Analyst – Energy and Environment	Deputy Chairperson	daniel.omodo@undp.org	+256 772 439928/772 289140
3	National Environment Management Authority	Monique Akullo	Senior Internal Monitoring and Evaluation officer & BIOFIN – Project Management Officer	Secretary	monique.akullo@nema.go.ug/makullo@ hotmail.com	+256 772 837935/754837935
4	National Environment Management Authority	Moses Masiga	BIOFIN - Biodiversity/ Environmental Economics National Expert	Member	apollomasiga@yahoo.co.uk	+256 772 563919
5	National Environment Management Authority	Fred Muwanika Roland	BIOFIN - Private Finance / Business National Expert	Member	frmuwanika@yahoo.co.uk	+256 779 604453
6	National Environment Management Authority	Francis Mwaura	BIOFIN - Private Finance / Business National Expert	Member	mungaimwaura@yahoo.com	+254 734 513259
7	Ministry of Water and Environment	Nathan Mununuzi	Senior Environment Officer	Member	mununuzin@yahoo.com	+256 759 644936/772 841 843
8	Ministry of Energy and Mineral Development	Godfrey Ndawula	Assistant Commissioner New and Renewable Source of Energy	Member	gndawula@energy.go.ug	+256 772 439144
8(a)		Caroline Aguti	Senior Environment Officer	Member	caguti@energy.go.ug/ caguti2002@ yahoo.com	+256 772 619300
9	Ministry of Local Government	Paul Bogere (RIP)	Commissioner, Local Councils Development	Member	peter_ourien@yahoo.com	+0392 943390
9(a)		Atim Joel	Senior Environment Inspector	Member	atimivan@yahoo.com	+ 256 772408873
10	National Planning Authority	Aaron Werikhe	Research officer	Member	awerikhe@npa.ug/aronwerikhe@gmail. com	+256 774 693761
11	Uganda Wildlife Authority	Aggrey Rwetsiba	Senior Monitoring and Research Coordinator	Member	aggrey.rwetsiba@ugandawildlife.org	+256 772 499735
12	Ministry of Finance, Planning and Economic Development	David Okwii	Senior Economist	Member	david.okwii@finance.go.ug	+256 789 417282
12 (a)	Ministry of Finance, Planning and Economic Development	Vivian Tumwebaze	Senior Economist	Member	vivian.tumwebaze@finance.go.ug	+256 775 765775
12 (b)	Ministry of Finance, Planning and Economic Development	Moses Ssonko	Senior Economist	Member	moses.ssonko@finance.go.ug	+256772 645293
13	Ministry of Agriculture, Animal Industry and Fisheries	Moses Kasigwa	Principal Economist	Member	mkasigwa@agricultrue.go.ug	+256 773 402300

14	Ministry of Wildlife, Tourism and Antiquities	Dr. Akankwasah Barirega	Ag. A/Commissioner Wildlife Conservation	Member	akankwasah@gmail.com	+256 755079000
15	National Forestry Authority	Denis Mutaryebwa	Plant Development Specialist	Member	mutaryebwadenis@yahoo.com	+256 772 544033
15(a)	National Forestry Authority	Aldous Obedmoth	Plant Development Specialist	Member	obedmothaldous@yahoo.com	+256 772656234
16	Uganda Bureau of Statistics	Emmanuel Menyha	Senior Statistician-Environment Statistics	Member	emmanuel.menyha@ubos.org/ emenyha@gmail.com	+256 711706094/772 889554
17	National Environment Management Authority	Fred Onyai	Internal Monitoring and Evaluation Manager	Member	fred.onyai@nema.go.ug	+256 772 517303
18	National Environment Management Authority	Allan Kasagga	Director Finance and Administration	Member	allan.kasagga@nema.go.ug	+256 772 489997
19	National Environment Management Authority	Martin Wamwaya	Liaison Officer -ISO	Member	wamwayamartin@yahoo.com	+256 772 590522
20	National Environment Management Authority	Eunice Asinguza	Senior Legal Counsel	Member	eunice.asinguza@nema.go.ug	+256 782 301142
21	National Environment Management Authority	Naomi Karekaho	Corporate Communications Manager	Member	naomi.karekaho@nema.go.ug	+256 772 513337
22	National Environment Management Authority	Bob Nuwagira	Senior Information, Education & Communication officer	Member	bob.nuwagira@nema.go.ug	+256 782 940384
23	National Environment Management Authority	George Lubega	Natural Resources Manager (Aquatics)	Member	george.lubega@nema.go.ug	+256 772 615222
24	National Environment Management Authority	James Elungat	Internal Audit Manager	Member	james.elungat@nema.go.ug	+256 772 537494
25	National Environment Management Authority	Dr. Evelyn Lutalo	Senior District Support Officer	Member	evelyn.lutalo@nema.go.ug	+256 772 652728
26	National Environment Management Authority	Elizabeth Mutayanjulwa	Environmental Education Materials Production officer	Member	elizabeth.mutayanjulwa@nema.go.ug	+256 772 411245

National Environment Management Authority
Plot, 17/19/21 Jinja Road, Kampala, Uganda
P.O Box 22255
www.nema.go.ug

United Nations Development Programme
Plot 11 Yusuf Lule, Kampala, Uganda
P. O Box 7184
www.undp.org