



Integrating Natural Capital into Sustainable Development Decision-Making in Uganda

A project funded by the UK Government



CONTEXT ANALYSIS

February 2019



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LIST OF ACRONYMS

ENR - ENVIRONMENT AND NATURAL RESOURCES

GDSA - Gaborone Declaration for Sustainability in Africa

GoU - Government of Uganda

IPBES - Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

LCCS - FAO Land Cover Classification Scheme

MDA – Ministries and Designated Authorities

MWE – Ministry for Water and Environment

NBSAP - National Biodiversity Strategy and Action Plan

NCA - Natural Capital Accounts

NDP II - Uganda's Second National Development Plan

NFA – National Forest Authority

NORAD - Norwegian Agency for Development Cooperation

NPA - National Planning Authority

NP-AEEA - National Plan for Advancing Environmental-Economic Accounting

PES - payments for ecosystem services

REDD – Reducing Emissions from Deforestation and forest Degradation

SDG - Sustainable Development Goal

UBOS – Ugandan Bureau of Statistics

UGGDS - Uganda Green Growth Development Strategy

UNCCD – United Nations Convention to Combat Desertification

UNDAF - United Nations Development Assistance Framework

UNFCCC – United nations Framework Convention on Climate Change

SEEA CF – UN System for Environmental-Economic Accounting Central Framework

SEEA EEA – UN System for Environmental-Economic Accounting Experimental Ecosystem Accounting

UNSD - United Nations Statistics Division

UWA – Uganda Wildlife Authority

1. INTRODUCTION

Biodiversity is an essential part of Uganda's 'natural capital stock'; the interactions of ecosystems and species underpin the delivery of many services and benefits that support economic activity and the well-being of its people. The sustainable use of these stocks of biodiversity is fundamental to maximizing economic growth and human well-being in Uganda over the medium to long term. However, the value of biodiversity is often neglected in traditional assessments of economic progress and development planning. This encourages inefficient and unsustainable growth, requiring investment in manufactured infrastructure to replace the benefits provided by nature. The loss of benefits disproportionately impacts the rural poor since much of their real income is directly dependent upon ecosystem services. These challenges are recognised in Uganda's National Development Plan (NDP II), Uganda Green Growth Development Strategy (UGGDS) and National Biodiversity Strategy and Action Plan (NBSAP). Collectively, these plans recognise the need to manage natural capital to deliver economic development and poverty alleviation. The plans also identify natural capital accounting as a strategic intervention towards improved management.

Natural capital accounts are a set of objective data on the stocks of natural resources, including ecosystems and species, and the flows of benefits they provide. They aim to provide detailed integrated statistics on how natural resources contribute to the economy and how the economy affects natural resources. In recent years, natural capital accounting (NCA) has become a prominent tool for providing more evidence-based approaches in support of sustainable development, green economy transition and climate change adaptation (Vardon *et al.*, 2017). By organising and integrating information on the environment, society and the economy, NCA can assist decision makers in evaluating land-use options, assessing progress towards policy targets and in policy formulation.

In order to extend Uganda's current national accounting system to better consider biodiversity-related natural capital, the National Planning Authority (NPA), National Environmental Management Authority (NEMA) and Uganda Bureau of Statistics (UBoS), with support from the UN Environment World Conservation Monitoring Centre (UNEP-WCMC), International Institute for Environment and Development (IIED) and Institute for the Development of Environmental-Economic Accounting (IDEEA Group) are implementing the project: **Integrating Natural Capital into Sustainable Development Decision Making in Uganda**. The project is being funded by the UK Darwin initiative and will be completed in March 2021.

The project directly responds to demands to extend Uganda's capacity for natural capital accounting, and build complementary analytical capacity amongst public decision makers, and other users, to employ this new evidence base in support of integrated economic and land-use planning and policy. The ultimate objective of the project is to support the delivery of green growth in Uganda that contributes to poverty alleviation, wealth creation and meeting biodiversity goals. As such, the project directly supports the delivery of the Ugandan National Development Plan, Green Growth Development Strategy and NBSAP. The work also supports international commitments to integrate the values of biodiversity-related natural capital in decision-making (Aichi Target 2, SDG Target 15.9) and as an associate member of the Gaborone Declaration for Sustainability in Africa.

This document is a first but very important step for the project. It will summarise key documents and insights from stakeholders and institutions in Uganda, to identify planning decisions in which it is important to consider the values of biodiversity and ecosystem services and in which natural capital framing is likely to be influential. The document is a 'live' document that will be updated during the course of the initial stages of the project. The present draft is based on a Desk Study of policy demands and entry points for biodiversity-related natural capital accounting information, and on the results of an inception workshop, held in Uganda in December 2018. This will, ultimately, directly inform the focus and design of a set of priority biodiversity-related natural capital accounts for Uganda.

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The remainder of this document is set out as follows. Section 2 summarises, firstly, the current state of play in terms of the integration of biodiversity into policies and plans, and, secondly, in terms of natural capital accounting in Uganda. Section 2 is informed by a stock-take of the progress on integrating biodiversity information into key economic development and planning processes in Uganda (provided as Appendix A) and a stock take of Natural Capital Accounting initiatives to date in Uganda (provided as Appendix B). In combination, these stocktakes identify where the stakeholder interests in biodiversity related Natural Capital Accounting lie and what the potential demands might be. Section 3 then summarises the key entry points for biodiversity-related NCA in Uganda, as well as identifying a number of challenges to its use. Finally, Section 4 focuses on the user needs, presenting the three proposed thematic accounts, the policy questions to which they respond, and key data holders for the accounts.

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2. 'BASELINE' FOR THE PROJECT

The stocktake of biodiversity integration progress in Uganda (Appendix A) and NCA to date in Uganda (Appendix B) can be used to develop a picture of the institutions and stakeholders and their interests in biodiversity-related NCA. Drawing on the stocktaking exercise, an assessment can be made of:

- Overall progress in integrating biodiversity into institutional processes and planning in Uganda;
- An overview of Natural Capital Accounting and the potential for NCA as a means of integrating biodiversity into planning in Uganda; and,
- Who the key stakeholders in biodiversity-related NCA are and their interests in biodiversity-related natural capital accounting.

From this assessment, the common needs that natural capital accounting (NCA) can satisfy through the project *Integrating Natural Capital into Sustainable Development Decision Making in Uganda* project can be identified. This, in turn, can directly inform the identification of the best possible 'entry points' for biodiversity focused natural capital accounting. For instance, with respect to supporting holistic policy, economic policy, development policy, environment policy, sector policy (including businesses), territorial policy (including local authorities) presented in Section 3. This should include identifying at which 'stages' of policy cycles demand for biodiversity-related NCA data is greatest or will be most influential.

2.1. PROGRESS IN BIODIVERSITY INTEGRATION IN UGANDA

2.1.1. LIST OF IDENTIFIED BIODIVERSITY-RELATED POLICIES, PLANS AND INITIATIVES

Uganda's environment and development policies, plans and strategies reviewed as part of this stocktake address biodiversity and environment issues, in varying degrees, in their goals, objectives, problem statements, principles, actions, targets and indicators and budgetary commitments for implementation of these activities.

Policies reviewed include:

- Uganda vision 2040
- Uganda Second National Development Plan II (2015/16 – 2019/2020)
- Uganda Green Growth Development Strategy (UGGDS) (2015-2030)
- National Biodiversity Strategy and Action Plan (NBSAP) (2015-2025).
- environment and natural resources (ENR) sub-sector gender mainstreaming strategy (2016-2021).
- Uganda's Mining and Mineral Policy 2018
- Uganda Forest Sector Policy and National Forest Plan
- Uganda Wildlife Policy
- Uganda national climate policy

Full details of these policies are included in Appendix A.

2.1.2. INSTITUTIONAL PROGRESS IN INTEGRATING BIODIVERSITY IN UGANDA

Uganda clearly has a diverse biodiversity and development policy landscape covering many important national and sector issues. Its relatively progressive policies embrace an 'integrated' approach to development and biodiversity, at least at a conceptual level. At an operational and implementation level, Uganda boasts a plethora of programmes, projects and initiatives on poverty reduction, investment, economic growth and environmental management that exhibit coherence with complementary policies and processes in the country. It is, therefore, essential that work on natural capital accounts in Uganda respond

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to national priorities articulated in key development frameworks such as Uganda Vision 2040, National Development Plan II (NDPII) (2015 – 2020), Uganda Green Growth Development Strategy (UGGDS) (2015-2030), National Biodiversity Strategy and Action Plan (NBSAP) (2015-2025), Strategic Program for Climate Resilience (SPCR) under the Pilot Program for Climate Resilience (PPCR), Uganda's Draft Mining and Mineral Policy (MMP) for Uganda 2018, and other relevant programmes, projects and initiatives and process at local, national, regional and global levels.

The progress towards integrating biodiversity into these development plans and wider policies is assessed in Table 2.1: Summary of progress in integrating biodiversity into policies and plans in Uganda. Policies, programmes, projects and initiatives on environment and development in Uganda are increasingly including explicit provisions for integrating the values of natural resource and biodiversity in decision-making. Consequently, they also require objective, rigorous and regular data on environment/biodiversity – economy/livelihoods interactions, thus providing numerous entry points for NCA in Uganda. Please note this table is based on the integration of biodiversity at conceptual level (i.e. actual policy and plans text) and does cover integration at operational and implementation levels. The latter information can be provided at the workshop.

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Table 2.1: Summary of progress in integrating biodiversity into policies and plans in Uganda

Policy document/Plan	At what level is BD considered	What focal BD (or NC) issues	Specified BD information requirement	Where in the policy cycle is the BD emphasis and entry point	Roles	Qualitative assessment of policy progress			
						Silos	Safe-guards	Isolated synergies	Holistic sustainability
Uganda Vision 2040	Environment and biodiversity are mentioned in the Vision aspirations, principles and targets of Uganda's Vision 2040. The environment and biodiversity are presented as an opportunity for transforming Uganda's economic transformation	Ecosystem restoration and value addition of ecosystem services. Wetlands, Forests, Rangelands, catchments name checked, Environmental sustainability, and mainstreaming climate change issues included	The term natural capital accounting is not used but is inferred in Vision 2040's monitoring and evaluation of biodiversity targets. It is also inferred in the aspirations, principles and targets the Vision. NCA can also providing indicators to track progress and inform decision making for achieving the goals of Uganda's Vision 2040		The Office of the President				
Uganda National Development Plan II (2015/16 - 2019/2020)	Environment and biodiversity included in the situational analysis and development context, strategic direction and key sectors of the, economy and monitoring and	Wetland ecosystem coverage, forest cover, climate change, environmental compliance, integration of environment and natural resources in national accounting systems , green economy, research of values of ecosystems and biodiversity, public awareness on environment and opportunities, green	NCA is not specifically mentioned but is inferred in NDP11 especially in the situational analysis, monitoring and evaluation and providing indicators to track progress and inform decision making for achieving NDP11. It can also inform progress across six interventions	Role of NCA is inferred in informing on progress across interventions under the environment and natural resources sub-sector including a database	The Office of the President has overall leadership and oversight of implementation of the plan to ensure its attainment. Other key actor the National				

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	evaluation including specific targets on wetland ecosystem coverage, forest cover, climate change and environmental compliance	economy and sustainable consumption and production practices. There is a clear role for NCA to play in informing on progress across these six objectives	proposed under the environment and natural resources subsector.	system for environment and natural resources management integration in the national accounting system, green economy , research on values of ecosystems and biodiversity, partnerships and networks for environment management and sustainable agriculture	Planning Authority and the Ministry of Finance, Planning and Economic Development				
Uganda Green Growth Development Strategy (UGGDS) (2015-2030)	Natural capital is covered in the problem statement, objectives, catalytic investment areas, implementation roadmap/action plan and monitoring and evaluation framework	Five core catalytic investment areas in the Strategy include agriculture, natural capital management, green cities (urban development), transport and energy for green growth and development. The natural capital management component of the strategy focuses on Wildlife and Tourism; Forestry; Wetlands, Fisheries and water resources (plus their associate sectors	Environmental/Natural capital accounts are called for across all sectors, to attribute responsibilities for resource management; accounts are also to be used to form an indicator of genuine savings and inclusiveness.	Planning, M&E	The Office of the President				

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		Public sector allocation and environmental fiscal reform, green public procurement, certification of sustainable production and trade and inclusive green social enterprise and green innovation and payments for ecosystem services (PES).							
National Biodiversity Strategy and Action Plan (NBSAP) (2015-2025)	Inherently, in all aspects of the Strategy	<p>Importance of biodiversity to development: Agriculture, forestry, wildlife and tourism, wetlands, fisheries, biodiversity and health.</p> <p>Issues: taxonomy, climate change, biotechnology & biosafety, GMOs, Oil, Biofuels, biodiversity disasters and hazards, pollution, green procurement, IAS.</p>	<p>National Target 1.1: 1.1 National target: By 2020, biodiversity values integrated into the National Development Plan, Budget Framework Papers, Ministerial Policy Statements and District Development Plans</p> <p>Under this target is one specific action relating to NCA:</p> <p>1.6 Develop and utilize biodiversity and ecosystem services valuation tools to quantify and monitor the environmental, economic and social value of biodiversity</p> <p>National Target 4.1. : By 2020, appropriate incentives for biodiversity conservation and</p>	Throughout the policy cycle	NEMA, which is the CBD Focal Point in Uganda, will be responsible for the over-all co-ordination of the implementation of NBSAPII. Sectoral agencies will be responsible for ensuring the implementation of the Sectoral strategies and action plans in the sectors. At the district level, the District Local Government shall be the lead agency in supporting NBSAPII implementation. Environment				

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			<p>sustainable use are in place and applied</p> <p>Under this Target is one specific action relating to NCA: 4.1.6 Integrate biodiversity accounting into national accounting and reporting processes</p> <p>NCA is only mentioned as a tool for mainstreaming, and that although some accounts have been produced they have not been integrated into national accounts, or disseminated to key stakeholders.</p>		<p>management including biodiversity is a decentralised function, in accordance with the National Environment Act 1995 and the Local Governments Act 1997</p>				
<p>Uganda's Draft Mining and Mineral Policy for Uganda 2018</p>	<p>Neither biodiversity nor natural capital are specifically mentioned, although the environment is covered briefly. The policy mission mentions a 'sustainable...and environmentally responsible mining industry'. One objective is "To promote and protect Health, Safety and</p>	<p>Very broad reference to adhering to environmental legislation. The policy notes a shortfall in enforcement of legislation.</p>	<p>None</p>		<p>Ministry of energy and mineral development is responsible for the policy; there will be an intersectoral committee that will include MWE.</p>				

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	Environment in the mineral industry;" There are a few paragraphs on "Environment, Social, health and Safety management"								
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Level of progress

	Evidence of progress
	Some evidence of progress
	No evidence of progress

Generally, biodiversity considerations feature prominently in development policies and plans in Uganda. Development, livelihoods and poverty issues are also integrated into biodiversity and environment policies. However, it is also worth highlighting that such a large number of policies in Uganda could create a 'higher level' challenge of planning alignment and coherence across very many policies and plans. A 'policy inflation' scenario without an adequate increase in capacity to deliver and coordinate all the policies present further challenges.

2.2. NCA OVERVIEW FOR UGANDA

Whilst many countries have only relatively recently started compiling natural capital accounts, these have often been immediately useful for deriving indicators from the accounts (e.g. for State of Environment reporting). Actual use of NCA for policy design and implementation tends to come from those with longer experiences in natural capital accounting, for example, to develop policy responses such as forestry sector plans. Table 2.2 provides an assessment of how the accounting initiatives in Uganda to date have been (or could be) used in these different stages of the policy cycle, namely: Issue or Problem Identification; Policy response; Implementation; Monitoring; and, Review (drawing on Vardon *et al.*, 2017). Table 2.2 also summarises the stocktake of scope, structure and thematic focus of these accounting initiatives, based on the descriptions in the previous section of this report.

A review of Table 2.2 identifies a limited set of NCA applications (note mineral and fossil fuel resources are not considered). The significant focus has been on forests and the benefits they provide. This includes Forest Resource Accounts produced by NEMA (2011) and via the UN-REDD Programme (Oliveria *et al.*, 2018). These are the only accounts that have attempted to assign monetary values to ecosystem service flows (i.e., forest benefits) and the stocks of natural capital (i.e., forest stocks), albeit all the accounting initiatives ground themselves in physical accounting of natural capital stocks and benefit flows. Indeed, the longer standing biomass survey produced by the NFA have a clear focus on compiling information on these physical measures for forestry resources (particularly) and other land cover classes (Diisi, 2009).

Water is also an important accounting theme. Whilst Table 2.2 identifies only one initiative in this regard, initial water accounts have been developed by Uganda with the support of UNSD and will soon be published. Experimental Ecosystem Accounts have also been produced for Uganda, as part of a collaborative effort between Ugandan institutions and UNEP-WCMC and the IDEEA Group (UNEP-WCMC & IDEEA, 2017).

Table 2.2 identifies that only two of these initiatives provide a clear time series of accounts, the biomass study and the experimental ecosystem accounts.¹ Without these time series, the potential to identify emerging issues is reduced. These two initiatives are also the only one to employ a fully spatial approach to accounting. Whilst this is not an essential pre-requisite for NCA, it does substantially increase the analytical possibilities the accounts support and the policy insights they can provide. As stated previously, this may have been a factor in the continued production of the land cover products by the NFA.

Generally, the accounting initiatives acknowledge the SEEA, although the forestry and water applications are more closely grounded in the SEEA Central Framework approach rather than the Experimental Ecosystem Accounting framework. Whilst the biomass survey makes no explicit mention of SEEA, its methodology of compilation is well aligned with the land and environmental resource stock accounts proposed by the SEEA. Generally, where ecosystem services are considered, these have focused on provisioning services, carbon sequestration and cultural ecosystem services related to biodiversity (e.g.,

¹ In many ways the experimental ecosystem accounts can be considered an extended application of the land cover products produced via the biomass survey.

recreation / wildlife watching tourism). Some wider ecosystem services are given consideration by the UN-REDD study for forest ecosystems (Oliveria *et al.*, 2018).

Generally, the accounts have been produced with institutions in Uganda with an environmental mandate (NEMA, MWE and NFA). This suggests limited uptake and use across sectors, although information on the users and uses of the accounts is patchy. In terms of policy entry-points, Table 2.2 provides an initial assessment of which entry points the accounting initiatives state they target or appear most relevant. All of the accounting initiatives are relevant to the problem identification stage of the policy cycle. They generally also have an intention to inform policy responses, although such responses are not identified in NEMA (2011). Three of the accounting initiatives appear to inform on the monitoring stage, reflecting the role of accounts in providing indicators to track progress towards policy targets. These comprise the forest accounts produced by NEMA (2011), the biomass and land cover accounts by NFA (Diisi, 2009) and the Experimental Ecosystem Accounts (UNEP-WCMC & IDEEA, 2017). The accounts do not appear to have been used in the policy implementation and review stages of the policy cycle but this should be further evaluated.

A final observation with respect to Table 2.2 is that all the accounting initiatives have been supported in some way by outside donors. In addition, UBoS is not identified as a lead producer of any of the accounts, although they have contributed via validation and consultation process in most cases. This reflects that the accounting initiatives identified in Table 2.2 have taken place outside of the normal statistical production process in Uganda.

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Table 2.2: Overview of Natural Capital Accounting Initiatives in Uganda

NCA Theme	Physical Accounts	Monetary Accounts	Temporal Coverage	Spatial resolution	SEEA	Ecosystem Services considered	Producer / Reference	User	Uses	Policy cycle entry point	Donor
Forest	Yes	Yes	2009	National or by Forest Reserve	Derived from SEEA CF 2003	Timber and NTFPs Carbon storage/sequestration Soil protection Biodiversity Recreation	NEMA (NEMA, 2011)	NEMA; NFA	Determine the physical stocks and flows of forestry resources in Uganda Determine the monetary value of the physical stocks and flows of forestry resources in Uganda Estimate the aggregate contribution of forestry resources to the national economy.	Problem identification Monitoring	WAVES
Forest	Yes	Yes	2015	National or by watershed management area	SEEA cited	Timber and NTFPs Carbon storage/sequestration Soil protection Disease prevention Water quality Inland fisheries protection Maintenance of	MWE / UN-REDD (Oliveria <i>et al.</i> , 2018)	MWE	Analyse the economic value of Uganda's forest resources and demonstrate policy instruments to alleviate pressure on these natural forest systems.	Problem identification Policy response	UN-REDD

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NCA Theme	Physical Accounts	Monetary Accounts	Temporal Coverage	Spatial resolution	SEEA	Ecosystem Services considered	Producer / Reference	User	Uses	Policy cycle entry point	Donor
						hydropower capacity					
Biomass and Land Cover (Forests a key resource)	Yes	No	1990; 2005 (2010 and 2015 for Land Cover only)	Fully (1 ha)	No - but well aligned	Focus on biomass for energy	NFA (Diisi, 2009)		Better planning and use of biomass derived energy at national, regional and local levels Address the extent of land cover distribution and a scenario based analysis for different land cover types	Problem identification Monitoring Policy response	NORAD
Water	Yes	No	Circa 2011	National	SEEA Water	Water provision	Economic Research Southern Africa (PhD Project, Kilimani, 2013)		Assesses the water supply and use situation in Uganda and identify under or over utilisation of this resource	Problem identification Policy response	National Treasury of South Africa

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NCA Theme	Physical Accounts	Monetary Accounts	Temporal Coverage	Spatial resolution	SEEA	Ecosystem Services considered	Producer / Reference	User	Uses	Policy cycle entry point	Donor
Ecosystem Extent Species	Yes	No	1990; 2005; 2010; 2015	Fully (1 ha)	SEEA-EEA	NTFPs / Iconic Species for wildlife watching tourism	UNEP-WCMC, IDEEA, WCS, NPA, NEMA (UNEP-WCMC & IDEEA, 2017)	NPA, NEMA	inform on a set of key policy application relevant to biodiversity in Uganda	Problem identification Policy response Monitoring	UNEP

2.2.1. NCA AS A MEANS TO INTEGRATE BIODIVERSITY IN ECONOMIC AND DEVELOPMENT DECISION-MAKING

This project must identify an appropriate niche in the NCA landscape in Uganda, which supports the accounting initiatives already underway or planned for the near future. At the same time, the objective for the project with respect to the attainment of Aichi Target 2 and informing integrated planning for improved outcomes for biodiversity and poverty alleviation remains paramount. Table 2.2 provides very useful context in this regard. In addition, Uganda has drafted a National Plan for Advancing Environmental-Economic Accounting (NP-AEEA) as part of a coordinated effort between UBOS, United Nations Statistics Division (UNSD), NPA, NEMA and other Ministries, Departments and Agencies. Whilst still being finalised, the NP-AEEA provides key direction on where such a niche for this project lies.

Drawing on NP-AEEA and this project proposal, Figure 1: Broad scope of a set of integrated NCA for ENR management in Uganda below provides a set of core natural capital accounts that would inform an integrated approach to ENR management in Uganda. The accounts identified in the blue circles reflect those already advanced or planned for in their development in Uganda using the System of Environmental Economic Accounting framework developed under the auspices of UNSD. The green circles reflect key themes for ecosystems that are supported via the SEEA framework that allow for integrating biodiversity into planning processes and are broadly aligned with development activities under the NP-AEEA. These themes should be considered as key accounting gateways for alignment with the principal entry-points identified for biodiversity integration via this document. Fundamental to successfully targeting these entry-points will be designing relevant ecosystem accounting modules (i.e., the green circles) that deliver indicators and insights with respect to policy goals, targets and principles (or other initiatives), for example, for the development of alternative livelihoods, increasing wetland and forest cover or demonstrating the value of biodiversity to multiple stakeholders. This decision-centred design will improve the effectiveness of the accounts as a key form of evidence in policy and land-use decision-making, thereby significantly improving their use value and the likelihood of investment in regular, institutionalised and improving production.

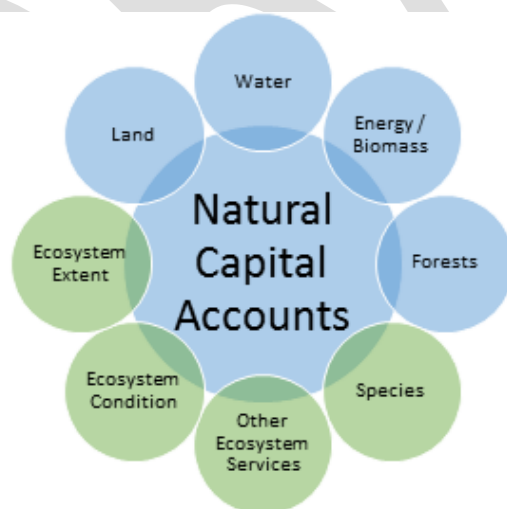


Figure 1: Broad scope of a set of integrated NCA for ENR management in Uganda

In order to help steer this process of developing ecosystem accounts in Uganda, the World Bank Policy Forum establishes a set of 10 'living principles' for NCA for better policy that should be drawn on (see Box 1). As identified in Box 1, the accounts developed via this project should

clearly respond to a diverse cross-sectoral user group and their needs identified in this report (Principle 1). They should be accurate and based on established and respected data sources. At the same time, they should also be reasonably simple so that national capacity can be quickly built, the initial accounts compiled and their application understood by multiple user, thus supporting Principle 4 and ensuring they are decision-centred. Accessible, relevant and useful accounts will naturally be sustained over time (Principle 8), and will become increasingly useful as more data becomes available. Vardon *et al.* (2017) likened NCA to a navigation aid for adaptive, multi-issue policymaking, helping understand ‘where are we now, exactly?’ and ‘where are we going?’.

BOX 1: TEN ‘LIVING PRINCIPLES’ FOR EFFECTIVE NCA FOR IMPROVING POLICY.

These are grouped under four broad categories, as detailed below (from Vardon *et al.*, 2017):

Comprehensive:

1. Inclusive – acknowledging the diverse stakeholders concerned with decisions affecting natural capital, responding to their information demands, respecting different notions of value, and using appropriate means of engagement
2. Collaborative – linking the producers of NCA, the users of NCA for policy analysis, and the policy makers using the NCA results; and building their mutual understanding, trust and ability to work together
3. Holistic – adopting a comprehensive, multi/interdisciplinary approach to the economic and environmental dimensions of natural capital and to their complex links with policy and practice

Purposeful:

4. Decision-centred – providing relevant and timely information for indicator development and policy analysis to improve and implement decisions with implications for natural capital
5. Demand-led – providing information actually demanded or needed by decision-makers at specific levels

Trustworthy:

6. Transparent and open – enabling and encouraging public access and use of NCA, with clear communication of the results and their interpretation including limitations of the data sources, methods and/or coverage
7. Credible – compiling, assessing and streamlining data from all available sources; deploying objective and consistent science and methodologies

Mainstreamed:

8. Enduring – with adequate, predictable resourcing over time; continuous application and availability; and building increasingly rich time series of data
9. Continuously improving – learning-focused, networked across practitioners and users, trialling new approaches, and evolving systems to better manage uncertainty, embracing innovation and taking advantage of emerging opportunities
10. Embedded – NCA production and use becoming part of the ‘machinery’ of government and business, building capacity, improving institutional integration for sustainable development and incorporating NCA use in procedures and decision-support mechanisms

Integrating the accounts with the sectoral dependencies, production and employment statistics, as well as wider socio-economic data will also expand the range of insights they can provide. This, in turn, will stimulate uptake and use across sectors. In some instances, this may require using a fully spatial approach and (ideally) a recording of the ecosystem service flows from ecosystem assets to economic units. A fully spatial approach will also support analysis of the trade-offs between different land-use options in different

administrative areas, thereby support the wider range of policy uses established from the review of stakeholders interests and entry points identified herein. A strong foundation for this is provided in UNEP-WCMC & IDEEA (2017), which could readily support accounts production within Ugandan institutions. Monetary valuation of ecosystem service flows will also facilitate the mainstreaming of this information, for example via cost-benefits analysis against other economic accounting data. This will require robust valuation methodologies clearly linking biodiversity and ecosystem service values to economic activities and statistics grounded in the transaction type values that underpin national accounting (i.e., avoiding welfare or willingness to pay type estimates).

2.2.2. WHERE IS THE INTEREST IN BIODIVERSITY AND NCA IN UGANDA?

In Uganda, interest in biodiversity and NCA comes mainly from national and sector policies and plans but also from new relevant initiatives. Uganda has a panoply of policies, programmes and initiatives at all levels - national, sector, local and project - on development and environment that are increasingly sensitive to natural resource, biodiversity and ecosystem service values, scarcities and deterioration.

Furthermore, Uganda is currently experiencing a significant amount of investment in national development with numerous infrastructural upgrades and proposed construction such as the Uganda–Tanzania Crude Oil Pipeline (UTCOP) which potentially have a high negative impact on ecosystems and key biodiversity areas. This requires decision makers in government to take into account mitigation measures that will reduce these impacts on natural capital. The inclusion of natural capital and adoption of the NCA approach could provide Uganda with an opportunity to be a leader in natural capital management and sustainable development and is being championed by the Natural Capital Forum.

Drawing on the stocktakes of biodiversity integration in key processes and the stocktake of natural capital accounting in Uganda, Table 2.3 provides a summary of initial stakeholders' possible supply and demand interests in biodiversity-related NCA, based on the documents reviewed to date. The list of stakeholders also includes those identified via a wider Political Economy Analysis that supported linking biodiversity information more generally to key decision maker in Uganda (identified with an asterix).

Table 2.3: Key stakeholders and their demands for biodiversity-related NCA

Stakeholder Name	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
National Planning Authority (NPA)	Achieving the NDP goals for a sustainable ENR Sector	Providing indicators to track progress and inform decision making for achieving the goals of the NDP, UGGDS, the SDGs and delivering enhanced livelihoods and food security generally
National Forestry Authority (NFA)	Demonstrating the value of forests for socio-economic development and securing public investment in improving forest stocks for multiple benefits (e.g., for biomass energy supply)	Tracking and communicating the trends in the stocks of forests and the benefits they provide. Support reporting on progress to sector targets, sustainable use planning (e.g., for biomass) and improving livelihoods of forest communities
Uganda Wildlife Authority (UWA)	Demonstrating the value of wildlife for in economic development and securing public investment in improving stocks of wildlife and the protected area estate	Provide a clear and simple means of assessing change over time and prioritising management actions.

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Ministry of Water and Environment (MWE)	Demonstrating the value of the environment to multiple sectors and stimulating investment in this resource	Improving land use / environmental planning to deliver multiple benefits. Provide indicators for reporting on trends in environmental assets (e.g. in the State of Environment Reports).
National Environment Management Authority (NEMA)	Demonstrating the value of the environment to multiple sectors and stimulating more sustainable use and investment in this resource	Providing indicators to track progress and inform decision making in support of the NBSAP and mainstreaming biodiversity into decision making generally. Provide indicators for reporting on trends in environmental assets.
Ministry Of Agriculture, Animal Industry And Fisheries (MAAIF)	Identify the investments in the environment and the agricultural systems they support to improve resilience and deliver sustainable food production systems.	Provide environmental-economic information on food security; environmental conditions and the sustainability of food, fibre and material production; issues related to rural incomes and employment to support sector planning.
Uganda Bureau of Statistics (UBoS)	Fulfilling its role to provide quality statistics to inform development planning	Provide a systematic way to account for biodiversity
Ministry of Finance, Planning And Economic Development (MFPED)	To incorporate into national accounts and make decisions that are economically in the best interests of the country.	Providing an information system that can assist in an holistic economic and development planning approach that integrates environmental benefits into decision making in a sustainable and inclusive fashion Informing resource mobilisation in support of the NDP and UGGDS
Ministry of Energy and Mineral Development	Understanding the economic and environmental implications of the energy and mineral sector	Providing an integrated information system that can assist in planning an environmentally sustainable mining and mineral sector
UN Statistics Division (UNSD)	Fulfil their mandate to support Uganda and other countries' efforts to strengthen their national statistical systems	Allowing UNSD to draw on experiences and lessons learned in Uganda to improve global support.
UN System of Global Organisations (UN Environment, UNDP, FAO)	Establishing the statistical information system required to inform better decision making that leads to improved outcomes for the environment (e.g., forests under UN REDD), development and ending hunger	Generating indicators to report on progress towards international commitments, including the SDGs, Aichi Targets, UNFCCC, etc.
Natural Capital	Provide support, access to	As a public information system that can be used to

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Forum	available/used methodologies, and community of practice.	inform a natural capital approach when planning of infrastructure and other development projects to deliver improved outcomes for biodiversity and the ecosystems local communities depend on
Environmental / Development NGOs (e.g., UNEP-WCMC, WCS, NatureUganda, and Conservation International)	<p>Demonstrating the value of the environment to multiple sectors and stimulating more sustainable use and investment in this resource for conservation and development purposes</p> <p>Provide exemplars / lessons learned for stimulating uptake of ecosystem accounting in other countries</p> <p>Mainstreaming their environmental and related development data into decision making</p>	<p>As a public information system that can be used in more holistic land use planning that provides improved outcomes for biodiversity and the ecosystems local communities depend on</p> <p>Demonstrating returns on investment in environmental improvement programmes</p>
GDSA (MWE / Conservation International)	Provide exemplars / lessons learned for stimulating uptake of ecosystem accounting in other countries (particularly GDSA members)	To achieve the commitment of integrate the value of natural capital into national accounting processes and decision making
World Bank (WAVES Programme)	Promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.	Draw on lessons learned and experiences from Uganda to support other countries in implementing biodiversity accounts.
Ministry of Tourism, Wildlife and Antiquities (MTWA)*	Highlighting the contribution of the tourism and wildlife sector to the economy and livelihoods	Providing integrated information on the environment and wildlife and tourism sectors to support sector planning
Ministry of Local Government (MoLG)*	Providing spatially disaggregated data.	Providing spatially disaggregated indicators to inform decision making for achieving the goals of the NDP, UGGDS, the SDGs and delivering enhanced livelihoods and food security generally at local scale as part of the Decentralization Policy of Uganda
District / Urban Local Governments *	Highlighting the value of environmental resources within their districts (e.g., with respect to national level planning, payments for ecosystem services)	Providing an information set that can inform local land use planning with better outcomes for biodiversity and livelihoods (dependent on sufficient spatial disaggregation being achieved)
Academia*	Mainstreaming their environmental and related development data into decision making	As a public information system to support research and analysis
Mass media / General public*		Understanding and communicating the state and trends in Uganda natural capital, the benefits it provides and

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		whether it is being managed in a sustainable and equitable way
Private sector*	To establish possibilities for payments for ecosystem services	To identify investment opportunities

*Identified via Political Economy Analysis from GEF CONNECT

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3. OPPORTUNITIES FOR BIODIVERSITY-RELATED NCA IN UGANDA

3.1. SUMMARY OF ENTRY POINTS

Entry points are windows of opportunity to influence decision-making that may occur at all levels of governance as well as situations or processes that help gain the interest of policymakers, important stakeholders or the broader public for biodiversity focussed NCA. Several entry points were identified during this review that pose immediate opportunities for biodiversity focussed NCA in Uganda. These entry points that provide concrete opportunities for biodiversity-related NCA to influence decision-making are summarised in Table 3.1.

Table 3.1: Summary of entry points for biodiversity-related NCA

Entry point: Policies, plans and initiatives		Concrete opportunities for biodiversity-related NCA
Uganda Vision 2040	Prioritise restoring and adding value to ecosystems (wetlands, forests, rangelands, and catchments), ensuring environmental sustainability, and mainstreaming issues of climate change into macroeconomic and sectoral development plans	Providing indicators to track progress and inform decision making for achieving the goals of Uganda's Vision 2040 of the NDP, UGGDS, the SDGs and delivering enhanced livelihoods and food security generally

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Uganda National Development Plan II (2015/16 – 2019/2020)	Interventions proposed under the ENR sub-sector relevant to biodiversity integration include reference to: (1) developing a database system for ENR for integration in the national accounting system, (2) implementation of the green economy initiatives including integration of environmental sustainability into planning and implementation of development processes, (3) expanding research on economic, ecological and socio-cultural values of ecosystems and biodiversity, (4) developing and strengthening national, regional and international partnerships and networks in environmental and natural resources management, (5) strengthening management of environmental aspects of oil and gas and other finite resources such as water and land, and (6) increase public awareness on ENR opportunities, green economy and sustainable consumption and production practices.	Providing indicators to track progress and inform decision making for achieving the goals NDP 11
National Green Growth Development Strategy (UGGDS) (2015-2030)	Strategies and interventions in the UGGDS matrix of monitoring and evaluation framework/roadmap for implementation include consolidating sustainable agriculture and implementing reforms to national extension system, undertaking a baseline Satellite System of Environmental Economic Accounts, Genuine Savings and Inclusiveness Analysis and facilitating businesses to fully integrate sustainability and equity concerns	Providing indicators to track progress and inform decision making for achieving the goals UGGDS
National Biodiversity Strategy and Action Plan (NBSAP) (2015-2025)	Proposed actions under this target 4.1 include developing and using biodiversity and ecosystem services valuation tools to quantify and monitor the environmental, economic and social value of biodiversity as well as to mainstream biodiversity into decision making and to develop a business case for biodiversity (1.1.6 and 1.1.8), developing guidelines for mainstreaming biodiversity into national, sectoral and district plans (1.1.7), and mapping of the status and trends of ecosystems (especially forests, wetlands and rangelands) (1.1.9).	Providing indicators to track progress and inform decision making for achieving the goals NBSAP

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Environment and Natural Resources (ENR) Sub-Sector Gender Mainstreaming Strategy (2016-2021).	The strategy enhance gender equity, participation and access to and control of resources in the environment sub sector, leading to poverty reduction. It includes specific objectives to improve access and control of environmental resources, and participation in planning and sustainable management of natural resources	Provide information to support gender disaggregated on biodiversity dependence data for reporting
Uganda's Draft Mining and Mineral Policy for Uganda 2018	Strategic objective 6 of the policy proposes the establishment of a mechanism to monitor and enforce compliance to health, safety and environmental standards. The policy also notes that mining sector in Uganda shall coordinate with lead agencies to develop specific environmental, health and safety legislative, regulatory frameworks and standards for the mining sector and streamline it with the national Environment and other relevant laws with an emphasis on environmental performance, ecological sensitivity and sites of historical importance among other	Providing an integrated information system that can assist in planning an environmentally sustainable mining and mineral sector
Energy Policy	The policy address, in varying degrees, development, poverty and livelihoods issues that are associated with biodiversity.	Providing an integrated information system that can assist planning in energy investments
Water Policy	The policy addresses, in varying degrees, development, poverty and livelihoods issues that are associated with biodiversity.	Require data and information on biodiversity and its role in addressing these issues.
Agriculture policy	The policy addresses, in varying degrees, development, poverty and livelihoods issues that are associated with biodiversity.	Require data and information on biodiversity and its role in addressing these issues
State of Environment report	Need to improve the data and indicators in this report to reflect the priority Sustainable Development Goals (SDGs) and green growth strategy for Uganda as a country	NCA can help to provide the necessary data to enrich these SOERs by providing input to the district level environment reports
Uganda Natural Capital Forum	The Natural Capital Forum was established to facilitate the process of institutionalising natural capital accounting in Uganda	Public information system that can be used to inform a natural capital approach when planning of infrastructure and other development projects to deliver improved outcomes for biodiversity and the ecosystems local communities depend on

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Gaborone Declaration for Sustainability in Africa	Under the GDSA, member countries have voluntarily committed to make progress on integrating the value of natural capital into natural accounting processes and public sector decision-making.	NCA will help demonstrate commitment to Gaborone Declaration, and also show trends in natural capital.
Uganda 2018 Budget	Biodiversity dependent sectors such as tourism, agriculture and water and sanitation feature in Uganda's Budget for 2018, which prioritised environment/biodiversity depended sectors	NCA can help inform the budget prioritisation.

3.2. CHALLENGES IN PRODUCING AND USING BIODIVERSITY-RELATED NCA IN UGANDA

There are a number of key challenges to the production and use of biodiversity-related NCA.

- Limited appreciation of biodiversity, its values and associated potentials and risks
- Limited use of the capitals approach in development planning
- Limited understanding of 'natural capital' in particular
- Political economy working against transparency and information-sharing
- Narrow conceptualisation of 'accounts'
- Lack of use of accounts as a basis for decision-making (except in corporate contexts)

These challenges must be addressed alongside or as part of this Project, wherever possible, to ensure the successful development and uptake of NCA, and its institutionalisation.

4. USER NEEDS ASSESSMENT

4.1. PROPOSED ACCOUNT THEMES

Three thematic accounts are proposed for development under this project, based on identified user needs:

1. **Tourism species and biodiversity tables** in order to provide information on the major tourism sites and their species. This will highlight the value of tourism expenditure (tourism earnings) per site and per specie and be able to provide for sustainability and protection laws that are tourism demand driven. Inform MTWA about this initiative and get their participation.
2. **Fisheries accounts** in order to provide information for policy making for the severely reducing fish stocks that has resulted to the declining trend in consumption and export earnings. The majority of the people were dependent on fish as a source of protein, hence threatening the livelihoods of the fishing communities and nutrition for the general population.
3. **Land accounts and land degradation accounts** to provide information on land and soils which is the driver for our agriculture (and a source of our minerals). These accounts will provide for an understanding the evolution of soil fertility in order to develop policies for better soil management practices in order to ensure sustainable agriculture and hence poverty eradication. Sustainable production of food to remain the leading food basket for the region. How do we maintain the drought resistance crops and species in order to reduce the upcoming tendency of reclaiming wetlands for crop growing?

4.2. USER EXPECTATIONS FROM THE PROJECT

UNEP-WCMC hosted UBoS, NPA and NEMA at a project meeting in Cambridge 23rd – 24th October 2018 to discuss the implementation of the project, understand expectations of potential users of the accounts and develop an agenda and plan for the inception workshop. Some general expectations for the project were discussed that could help inform the design of the natural capital accounts compiled. These are listed below:

1. To build capacity of UBOS to compile and disseminate natural capital accounts. This calls for enhancement of capacity on understanding the interactions in the environment with the concepts of biodiversity and ecosystem. This will help better understand the environment input data but also explain the environment output data from the accounts. Staff will develop capacity to adjust the input data and also make consistent relations of interactions in the environment.
2. To build capacity to compile Environmentally Extended Supply and Use Tables (EE-SUT), which will provide data on the share of Value added from the environment sector to GDP in order to include the value of biodiversity in our traditional assessments of economic progress. This will provide a basis for guiding policy on prioritization on funding to environment sectors for effective monitoring & evaluation and sustainable use of natural capital in the country's production. The EE-SUT will allow the computation of the cost of environment depreciation to our GDP thus, giving the cost of the environment to economic growth.
3. To provide greater appreciation of Natural capital in decision making while showing the link between the economy and the environment. How does biodiversity affect the economy? Is biodiversity a clear source of revenue? What are the effects of job creation and biodiversity? Tourism is ecological based, therefore need to understand the need for biodiversity as a back bone for tourism. Guarantee of biodiversity to sustain our tourism which is one of our major sources of income.
4. To measure the impact of economic activity on biodiversity; for example, estimation of the gains from oil in the rich biodiversity region and options that would be the most environmentally friendly efficient route for transportations and for all the infrastructure? How can the policy

making be guided to provide sufficient funding or funding to the environment sectors to match the benefits of value added derived from the environment?

5. To develop a macro model and tools that the government needs to help in policy and decision making which provides answers to key policy questions and fed into the policy debates going on in the country. For example, what taxes, charges, bonds, fines etc. do we introduce on natural resources use or destruction?
6. To provide policy direction for the Natural Capital led industrialisation that is on the agenda- how do we develop the value chains from the garden to final consumption? Agriculture, Mineral, and tourism value chains with small scale industries which are labour intensive for job creation. What are the assumptions that we need to make to ensure that this is sustainable? Sustainable value chains - How do we guide planning for natural resources led industrialization?
7. Develop communication strategy to package all environment based information for the different audiences. Design publications for regular disseminations and improve the existing ones- Natural state of the Environment Report. The dissemination will be in the Compendium of EEA.
8. Creation of sustainable system for the compilation of natural capital accounts which entails publication of user manuals for the compilation systems and policy making tools that will be designed by the project
9. Institutionalization of environmental-economic accounting and use of environmental-economic accounting in decision making, which is key for sustainable production and use of these accounts.
10. To give credence to Uganda's State of Environment Report

4.3. POLICY QUESTIONS

For the accounts to be useful, and, therefore, used, they must respond to policymakers' information needs. Table 4.1 to Table 4.3 below describes some of the key policy questions which the proposed accounts will help to answer, this draws on the context report, discussions with the project team at the meeting in Cambridge (23rd – 24th October 2018) and updated following the project inception workshop in Kampala (11-12th December 2018, see separate workshop report). Table 4.1 to Table 4.3 do not present information ordered by rows (i.e., information in the cells on the same row do not all pertain to the same policy question)

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Table 4.1: Policy questions to which the tourism and biodiversity accounts will respond

Policy question	Key users (decision-makers and policymakers)	Key Accounts Elements (data items)	Comments (format of accounts, required, timings etc.)
What are the trends in biodiversity (Iconic Species and ecosystems) that support tourism activity?	District Local Councils	Trends in tourist numbers and their nationalities (domestic, regional, international)	Finance will only respond if we use environmentally extended supply and use tables. We need these types of values.
What is the value of tourism expenditure (tourism earnings) per site and per specie?	District Technical Planning Committees	Revenues tourist generate at different entry points	For informing on budget allocation decisions, yearly accounts would be needed.
How should we design protection laws for biodiversity (e.g., with respect to gazettment and degazettment of protected areas) to support the tourism industry?	Parliament / Cabinet	Areas frequently visited, their visit rates and duration of stays	Spatial data for species and their habitat is inadequate and where this data is available it is often not updated on a regular and consistent basis. This may prove a challenge for compiling the accounts
How does biodiversity affect the economy? Is biodiversity a clear source of revenue? Can we show the return on investment in the tourism industry and support the case for further investment to unlock more opportunities for sustainable wildlife based tourism	Line Minster (ministry), MTWA and MWE	Domestic and international expenditure	
How should we decide to undertake non-conservation economic infrastructural activities within Protected Areas, including the wider exploitation of natural resources?	MALGS	Trends in the number of species, their abundance and their distribution	
How should we decide the budget allocation to the biodiversity and wildlife watching tourism sector?	Cultural institutions	Health of species and their habitat. Conservation / Threat status of species	
At what level should we set national park access fees?	Ministry of finance	Management costs for wildlife watching tourism sites	

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How can we better manage biodiversity to support job creation in the tourism industry? How can this be used in the context of poverty alleviation, boosting local incomes and creating markets for local goods (e.g., handicrafts)?	Ministry of finance	Ecosystem services	
How can we make better use of wildlife resources to increase international tourism and foreign exchange earnings?	Ministry of finance	Type and value of local services provided by communities to tourists around tourist sites	
Is there the potential to increase domestic tourism, for example via increased trips to forest reserves?	Ministry of finance, MWE	Information on the tourism value chain	
Which 'wildlife tourism packages' should be developed (with necessary infrastructure) to unlock the full potential of Uganda wildlife watch tourism industry?	MWE	Information on the level of activity of private tour operators and the value of the packages they provide	
How can relocation of species also support the tourism industry as well as satisfying objectives for conservation?	MWE		
Where are conservation activities lacking that threaten the resource base for wildlife watching tourism in Uganda?	MWE		

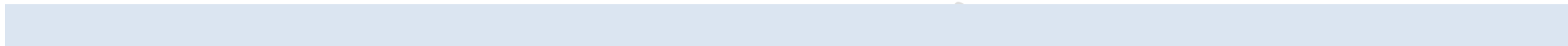
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Table 4.2: Policy questions to which the Fisheries accounts will respond

Policy question	Key users (decision-makers and policymakers)	Key Accounts Elements (data items)	Comments (format of accounts, required, timings etc.)
What are the trends in Uganda's Fish Stocks?	Local government fisheries department	Fish catch (size and diversity)	
What is the economic implication of declining fish stocks in domestic and export markets?	MAAIF (playing a strategic compliance role)	Fishing efforts (Fishing time per unit catch)	
What is the implication of declining Fish Stocks on livelihoods in lakeside communities?	Fish exporters' association (development role)	Fish stocks (physical)	
What is the implication of declining Fish Stocks on nutrition (i.e., protein consumption) within the general population?	Ministry of Foreign Affairs (re DRC and trans boundary issues in Lake Victoria)	Fish exports (physical and monetary)	
How should we set standards for fisheries practice?		Value of fish products (monetary)	
At what level should the government to decide the fish levy on catch at the national level?		Quantity of fish consumed domestically (Physical)	
How do we report on SDG 14.4.1 (Proportion of Fish Stocks within biologically sustainable levels)?		Employment levels (Physical)	
Do we have enough fish to support more economic activity, for example to build new fish processing facilities?			
What is the economic loss of no action to address pressures on fisheries (pollution; habitat			

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degradation; invasive species; over-use; and, background climate change)?			
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Table 4.3: Policy questions to which the Land and land degradation accounts will respond

Policy question	Key users (decision-makers and policymakers)	Key Accounts Elements (data items)	Comments (format of accounts, required, timings etc.)
What is the trend in soil fertility in Uganda?		Land Use and tenure	Accounts should be spatial as the environment is intensely local, as are the social & economic impacts that often emerge from environmental / land degradation
How can soil management practices be improved in order to ensure sustainable agriculture and alleviate poverty?		Livelihoods and productivity data	
How can soil management practices be improved to reduce pressure to convert on natural habitat? (Especially reclaiming of wetlands for crop growing)		Biological and chemical indicators of degradation	
Where should investment be targeted to improve soil management?		Population density & urbanisation	
How should economic instruments be designed to deliver improved soil management where it matters?		Proxies for productivity of land (e.g., Net primary production)	
How do we ensure sustainable production of food to remain the leading food basket for the region?		Statistics on soil fertility, structure, etc.	
Where and how should we address land degradation to ensure food security, particularly for those that are most vulnerable?			
Are we using land efficiently? Is there under-utilisation of land in some areas and over utilisation in others?			
How is land degradation related to shifting crop patterns (e.g., more low-value maize, shifting banana belt)? What are the implications of this for the economy, livelihoods and food security?			

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How do we maintain the drought resistance crops and species in order to reduce the upcoming tendency of reclaiming wetlands for crop growing?			
How do we report on SDG 15.3.1 (Proportion of land this is degraded over total land area)?			

4.4. DATA HOLDERS

For the accounts to be produced, relevant data is required. Uganda is fortunate to have a wealth of data, but, as in most countries around the world, it is spread across a number of sources rather than compiled into one place. Table 4.4 to

Table 4.6 aims to identify the key data holders for each thematic account, and will provide a starting point for communications and outreach to obtain the relevant data. Again this draws on the discussions with the project team at the meeting in Cambridge (23rd – 24th October 2018) and updated following the project inception workshop in Kampala (11th - 12th December 2018) and bilateral stakeholder engagements in Uganda (18th - 21st March 2019).

Table 4.4: Data holders and available data (Tourism and biodiversity accounts)

Data	Institution	Further details
Information on Protected Areas Extent	National Environmental Management Authority (NEMA) / UNEP-WCMC World Database on Projected Areas	The WDPA is maintained and regularly updated when national bodies (such as NEMA) notify of changes to the protected area estate boundaries.
Land Cover Maps 1990; 2002, 2010; and, 2015	National Forest Authority	These are regular produced on a 5-year basis by the NFA
Information on Species Numbers and Location inside protected areas	Uganda Wildlife Authority / National Biodiversity Data Bank / Wildlife Conservation Society	UWA undertake a species census about 5 years in forests and 3 years in savannah national parks. State of Wildlife Resources in Uganda report for 2018 will be on the internet soon
Information on Species Numbers and Location outside protected areas	UWA / NEMA / National Biodiversity Data Bank / Wildlife Conservation Society	UWA undertake periodic census in parishes where sports hunting occurs.
Information on wildlife watching tourism sites and their management costs	MTWA / Uganda Wildlife Authority (UWA)	Some of these are private entities – but UWA have some facilities. Tend to be low end and student lodges. There some data in the financial report from MTWA
Information on the sale of local products near national parks. Handicrafts, can we see how this supports local livelihoods	MTWA	There are some studies on tourism development by the MTWA that may provide some information on community level activities around national parks.
Information on Tourist Visits to National Parks – Number of tourist and number of nights they participate in visit	Ministry of Wildlife, Tourism and Antiquities (MTWA)	Statistics are compiled by the MTWA on an annual basis https://www.tourism.go.ug/statistics1 MTWA have a planning unit for developing statistical abstracts. They may also be able to provide data on duration of stays.
Information on Tourist Visits to watch wildlife outside of National Parks - Number of tourist and number of nights they participate in visit (this includes forest reserves)	NFA	NFA provide eco-tourism opportunities within some of their forest reserves

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Park fees and guiding services	UWA / MTWA	Park fees and the costs of activities such as chimpanzee tracking are set by UWA for national parks. These can be related to visitor numbers and participation.
Information on In-country Wildlife Watching Tourist Expenditure – transport, hotels, services, etc.	MTWA	MTWA have done some research into the tourism value chain.
Spatial information on Poverty	Uganda Bureau of Statistics (UBoS)	These data are available from the UBoS website. https://ubos.maps.arcgis.com/home/index.html
Administrative area boundaries in Uganda	Uganda Bureau of Statistics (UBoS)	These data are available from the UBoS website.
Information on employment	Uganda Bureau of Statistics (UBoS)	These data are available from the UBoS website.

Table 4.5: Data holders and available data (Fisheries accounts)

Data	Institution	Further details
Fish Stocks: Specialised study for lakes and rivers, ponds and cages	National Fisheries Resources Research Institute (NaFIRRI)	Kajjansi Office hold data on aquaculture in ponds Jinja office for cages in lakes.
Fish Stocks: Specialised study for breeding cycles for different species of fish -> recruitment	NaFIRRI	May have information on this for some species
Fish Stocks: Studies on stock estimates for total fish stocks and economically important species (e.g., Nile Perch and Tilapia)	NaFIRRI	Biomass stocks are only for Lake Victoria (Nile Perch, Prawns; , Tilapia and other species). There is an annual time series
Where do fishing profits accrue? Exports earnings are high but these profits may be accruing to foreign investment companies		
Are there any models that we could be using to recreate fish stocks from catch and other data?	NaFIRRI	Catch assessment and frame surveys available for wider range of lakes (Albert rift area; Kyoya and even minor lakes). These can be used to estimate stocks relating effort to catch.
Sustainable yields based on fishery stock assessments	NaFIRRI	Lake Victoria only at the moment. Biomass surveys Relate catch to effort and trends to identify where the MSY could have been – if passed or if it has yet to be passed

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Information on fishing effort (number of licenses, boats, fishermen, fuel used, etc.). Disaggregated to small and large scale fisheries.	NaFFIRI / MAAIF Directorate of Fisheries Resources (DFR)	Frame survey – all boats, gear, fisherman, socio-economic surveys
Types of flow captured and from which source (wild vs aquaculture, small vs large scale)	MAAIF DFR	Collected annually at landing sites and for aquaculture. There is a statistical abstract.
Information on fish catch from different land sites in fisheries	MAAIF DFR / NaFIRRI	Collected annually at landing sites and for aquaculture. There is a statistical abstract. Trends available for some areas from 1961. Frame survey is also by landing site and then catch assessment at the different landing sites. Stratification according to district. Sample a few landing sites and scale up. Stratification in terms of effort, gear / boats and quantity of fisherman
Information on fisheries contribution to GDP and export value	UBoS	Collected yearly
Information on livelihoods – incomes / jobs by gender in direct fishing and fish processing activities	NaFFIRI	Socio economic studies have been done in these areas. May be absent for the post-harvest industry.
Information on value chains – post harvest losses; value added via processing activities (locally and for export)	NARO Office Kawanda	Probably some studies on this
Amount of fish consumed and where it is consumed	MAAIF/ UBOS NaFIRRI	Amount of Fish Exported (regional); Local consumption. Bank of Uganda have a good dataset on Nile Perch, Tilapia from industries to export markets. In frame survey asked how much they take home from the landing site. URA Webportal (UBoS) FAO – may have some data. WFP & FAO survey
Fish fries – how many are used for breeding and how many put back to ponds and cages	NaFIRRI Kajjansi office NaFFIRI	Census of ponds done recently (ask Gertrude at Kajjansi) – the district statistical abstracts may have this too Remote sensed information on cages and their areas at Jinja office. No ground truthing. Website: Cage agriculture – Pesca project, maps you can explore are here
Information on economic transactions (subsidies, taxes / levies, etc.)	MAAIF DFR	Licenses are issued. These are dedicated at district level, just resuming for Lake Victoria. Trying to roll out to all lakes. Levies paid by exporters – fish factories.

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		Fees to fisherman for permits
Nutritional information fisheries catch	NARO Office - Kawanda Makerere University Fisheries & Aqua Dept	For the man species – nutritional values are available format the three main species.
Information on enforcement of fishing regulations (how many and where)	MAAIF -> DFR	2017 enforcement (BMU disbanded in 2015) been on Lake Victoria and major roads – this is a costly exercise.
Information on poverty incidence and unemployment	UBoS	These data are available from the UBoS website. https://ubos.maps.arcgis.com/home/index.html
Information on environmental pressures (pollution and invasive species)	NaFIRRI NEMA	Some studies by NaFIRRI
Information on important fishery habitats (e.g., Nurseries)	NaFIRRI	This is known for some areas and could be extrapolated to other areas. A crude indicator could be the extent of these habitats in different aquatic systems
Environmental protection expenditure: to address pressures, protect important habitat and enforcement of fishing regulations	MAAIF DFR / NEMA	Data on the cost of enforcements but not enough. Moving towards protecting and gazetting breeding areas. Need resources to demark these areas.

Table 4.6: Data holders and available data (Land and land degradation accounts)

Data	Institution	Further details
Land Cover Maps 1990; 2002, 2010; and, 2015 (land cover change)	National Forest Authority	These are regular produced on a 5-year basis by the NFA
Data on wetland and forest extent	UBoS / WRI / NFA	https://www.wri.org/resources/data-sets/uganda-gis-data
Data already organised for reporting on land degradation	LDN Working Group	https://knowledge.unccd.int/sites/default/files/ldn_targets/Uganda%20LDN%20TSP%20Country%20Report.pdf
Default global data on land degradation sub indicators	UNCCD and Trends.Earth	http://trends.earth/docs/en/about/data_sources.html
Baseline data on soils for Uganda		https://esdac.jrc.ec.europa.eu/images/Eudasm/Africa/images/maps/download/afr_ug2001so.jpg
Soils data for Uganda (statistics on SOC, fertility, structure, etc.)	MAAIF / NARO MWE Makerere University (MAK)	They understand where nutrient mining – based in Kawanda Lavemp project in MWE; These are where the soil scientist are. MAK – college of agriculture and environmental scientist. Prof Tenuare. Do soil fertility tests on

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		various crops. Developed soil testing kits that are cheap – UGS 350
Information on the extent of different agro-ecological zones in Uganda	MAAIF	There is a map of this
Agricultural incomes and their trends	MAAIF	May have some studies on this – information requested
National fertiliser policy - statistics on fertiliser use in the country	EPRSC	Just a few commercial farms use this (1%)
Changes in crop profile - do people have to move towards more marginal crops that are degradation resistant (e.g., maize / cassava)? Is the banana belt shifting?	MAAIF	Discussion indicate that this is not clearly linked to degradation – breeders develop new strains that will be more resistant to marginal crops. However, nutrient mining happening – reflected in banana belt shrinking.
Land pollution (plastics)		
Size of land holdings – is there a link between small holdings and degradation		
Information on land use and tenure		MAIFF
Physical and monetary Information agricultural yields (including cash crops)	UBoS / MAAIF / NARO	http://uganda.countrystat.org/search-and-visualize-data/en/ http://www.naroinfohub.org/ MAAIF produce a statistical abstract with these type of data. It is possible to organize this information by district level.
Data on subsistence agriculture	UBoS	Need access - https://ubos.maps.arcgis.com/home/index.html
Data on other provisioning ecosystem services (papyrus from wetlands)	UBoS / WRI	https://docs.wri.org/Ug_Theoretical-revenue-from-papyrus-harvest.zip?_ga=2.168793569.1776065799.1551892257-1251484463.1551892257
Population data by administrative area	Uganda Bureau of Statistics (UBoS)	
Spatial information on Poverty	Uganda Bureau of Statistics (UBoS)	Need access - https://ubos.maps.arcgis.com/home/index.html
Administrative area boundaries in Uganda	Uganda Bureau of Statistics (UBoS)	These data are available from the UBoS website.
Information on employment	Uganda Bureau of Statistics (UBoS)	These data are available from the UBoS website.

APPENDIX A: STOCK TAKE OF BIODIVERSITY INTEGRATION IN KEY DEVELOPMENT AND NATIONAL PROCESSES

This section presents an analysis of Uganda's development and biodiversity policy and planning landscape, focussing on how development policies and plans integrate biodiversity, and, conversely, how biodiversity policies and plans integrate consider development. This allows the identification of common biodiversity integration successes and barriers that natural capital accounting (NCA) could draw on and develop through the project "Integrating Natural Capital into Sustainable Development Decision Making in Uganda". Official Government of Uganda (GoU) policy documents are the main sources of information presented in this section.

NATIONAL POLICY DOCUMENTS AND PLANS FOR BIODIVERSITY INTEGRATION

The call for monitoring and conserving the stocks of biodiversity-related natural capital in Uganda, and integrating the benefits it provides, appears in multiple policy and planning instruments in the country. These include in support of national economic development priorities (via Uganda Vision 2040, Uganda Green Growth Development Strategy and the National Development Plan) and achieving international commitments, such as attainment of the SDGs (via the National Development Plan) and Aichi Targets (via the NBSAP).

UGANDA VISION 2040

Uganda Vision 2040 provides development paths and strategies to operationalise Uganda's Vision statement, which places emphasis on achieving "A transformed Ugandan society from a peasant to a modern and prosperous country within 30 years" as approved by the Ugandan Cabinet in 2007. With 22 years left to achieve the vision, it aspires to pursue economic development and socioeconomic transformation premised on the principles of a green economy such as equity, environment sustainability, resource use efficiency, climate change adaptation and mitigation and inclusiveness. Environment and biodiversity are considered in Uganda's Vision 2040, in particular by restoring and adding value to ecosystems (wetlands, forests, rangelands, and catchments), ensuring environmental sustainability, and mainstreaming issues of climate change into macroeconomic and sectoral development plans. This analysis has identified that NCA can provide the framework for monitoring the attainment of Uganda's Vision 2040 targets, for example via forests, ecosystem or biodiversity accounts that provide indicators to track progress towards sustainable production and consumptions.

UGANDA NATIONAL DEVELOPMENT PLAN II (2015/16 – 2019/2020)

Uganda's second National Development Plan (NDP II) provides the foundations for reaching Uganda's "Vision 2040" of upper-middle income status. The main goal of NDP II is to "propel Uganda towards middle income status by 2020 through strengthening the country's competitiveness for sustainable wealth creation, employment and inclusive growth". NDP II further identifies five priority investment areas: a) sustainable agriculture development, b) tourism, c) minerals, oil and gas, d) infrastructure development and e) human capital development. The time frame of Uganda's NDPII is 2015/16 – 2019/20.

The Office of the President has overall leadership and oversight of implementation of the plan to ensure its attainment. The National Planning Authority (NPA) is charged with the task of developing NDP II performance indicators and targets, in liaison with sectors, to track progress towards the attainment of the NDP II. The Ministry of Finance, Planning and Economic Developments is responsible for resource mobilization and allocation amongst other things. In addition, as NDP II is a national policy framework geared towards the improvement of Uganda's economic growth, many other stakeholders including

Ministries, Departments and Agencies, Cabinet, Parliament, Office of the Prime Minister, sectors, local governments, private sector and non-state actors have an important role to play in its implementation.

Biodiversity considerations feature prominently in Uganda's NDP II, which reports slow progress made in reducing biodiversity loss. NDP II also has a dedicated section on "Environment and natural resources", which details specific objectives and interventions for biodiversity management. Biodiversity is also incorporated in the plan's recommended post-2015 goals and targets (Annex 3) and 'Public investment plan projects' (Annex 6). Biodiversity is integrated into tourism, through the recognised need to link the development of the sector to biodiversity conservation priorities by creating tourism and green zones. Biodiversity is also integrated into the oil and gas sector through a planned intervention to strengthen institutional capacity to manage the impact of oil and gas activities on environment and biodiversity.

Under the NDP II, the Environment and Natural Resources (ENR) sub-sector is responsible for ensuring rational and sustainable utilisation, development and effective management of environment and natural resources for socio-economic development of the country. The sub-sector is composed of; forestry, wetland resources management, meteorology, environmental management, and climate change. The focus of the sub-sector will be geared towards the i) protecting, restoring, and maintaining the integrity of degraded fragile ecosystems; ii) increasing sustainable use of environment and natural resources; iii) increasing national forest cover and economic productivity of forests; iv) increasing the national wetland coverage; v) increasing the functionality and usage of meteorological information systems; and vi) increasing the country's resilience to the impacts of climate change.

The ENR sub-sector targets over the five years of the NDP II are to:

- increase wetland ecosystem coverage from 10.9 percent in FY2013/14 to 12 percent in FY2019/20;
- increase the percentage of forest cover from 14 percent in FY2012/13 to 18 percent in FY2019/2020;
- increase automation of climate monitoring network from 10 percent FY2014/15 to 40 percent in FY2019/2020;
- ensure 20 percent increment in national coordination and monitoring of the implementation of international standards and commitments, as well as of the National Climate Change Policy (NCCP) and its implementation strategy in FY2019/2020; and
- enhance environmental compliance from 70 percent in FY2013/14 to 90 percent in FY2019/2020.

Interventions proposed under the ENR sub-sector relevant to biodiversity integration include reference to: (1) developing a database system for ENR for integration into the national accounting system, (2) implementing green economy initiatives including the integration of environmental sustainability into planning and implementation of development processes, (3) expanding research on economic, ecological and socio-cultural values of ecosystems and biodiversity, (4) developing and strengthening national, regional and international partnerships and networks in environmental and natural resources management, (5) strengthening management of environmental aspects of oil and gas and other finite resources such as water and land, and (6) increasing public awareness of ENR opportunities, green economy and sustainable consumption and production practices. There is a clear role for NCA to play in informing on progress across these six objectives.

UGANDA GREEN GROWTH DEVELOPMENT STRATEGY (UGGDS) (2015-2030)

The Uganda Green Growth Development Strategy (UGGDS 2017/18 -2029/30) aims to operationalise green growth principles and accelerate the implementation of global development goals, Uganda Vision 2040 and the NDP II. It covers a time horizon of fifteen years. An implementation roadmap/action plan of the strategy was also developed by the Global Green Growth Institute (GGGI) to sequence interventions for the short term, medium term and long term.

In Uganda's context, green growth is defined as *"an inclusive low emissions economic growth process that emphasizes effective and efficient use of the country's natural, human, and physical capital while ensuring that natural assets continue to provide for present and future generations"* (UGGDS 2018). According to its strategic framework, the UGGDS serves as a framework and/or guidance tool that aims to:

- Accelerate economic growth and raise per capita income through targeted investments in the priority sectors with the highest green growth multiplier effects;
- Achieve inclusive economic growth with poverty reduction, improved human welfare and employment creation;
- Ensure that social and economic transition is achieved through a low carbon development pathway that safeguards the integrity of the environment and natural resources

The UGGDS focuses on five core catalytic investment areas of agriculture, natural capital management, green cities (urban development), transport and energy for green growth and development. The natural capital management component of the strategy focuses on Wildlife and Tourism; Forestry; Wetlands, Fisheries and water resources (plus their associate sectors). The planned strategic interventions under this component are clustered around four areas: tourism development; sustainable forestry management; sustainable wetlands; and optimal water resources management.

Some of the proposed biodiversity and environment-related sources for financing for the UGGDS include: public sector allocation and environmental fiscal reform; green public procurement; certification of sustainable production and trade; inclusive green social enterprise and green innovation; and payments for ecosystem services (PES). As a key part of the enabling environment set out in the UGGDS, the requirements for generating appropriate data, statistics and policy support for NCA is explicitly described in Section 4.10 as follows:

- The government needs to fast track a roadmap for integrating the System for Environmental Economic Accounts to address the concerns of appropriate attribution of economic activities in terms of depletion and appreciation across all sectors of government.
- Undertake comprehensive environmental economic accounts across all sectors. Develop appropriate interfaces through input-output table analysis.
- The assessments generated should be used to describe and attribute responsibilities for resource maintenance, efficiency and effectiveness enhancement in production, consumption and distribution
- The scope of the Natural Capital Accounting (NCA) accounts should be wide, to capture socioeconomic activity and to support future policy and economic activity.

Strategies and interventions in the UGGDS matrix of monitoring and evaluation framework/roadmap for implementation include: consolidating sustainable agriculture and implementing reforms to national extension system; undertaking a baseline Satellite System of Environmental Economic Accounts; Genuine Savings and Inclusiveness Analysis; and facilitating businesses to fully integrate sustainability and equity concerns.

Biodiversity and environment considerations also feature prominently in the conceptual framework for Uganda's Green Growth Development Strategy. The UGGDS makes specific reference to NDP II and Uganda Vision 2040 target on increasing forestry coverage from 15 percent in 2010 to 24 percent by 2040. It also has a dedicated section on "Biodiversity Conservation and Natural Resource Management", which emphasise the importance of Uganda's NBSAP and of maintaining the integrity and functionality of ecosystems and biodiversity as a key contributor to accelerated economic and social development. The UGGDS also provides committed to gender density targets for decent jobs supported by natural capital (70% for women).

Public sector allocation and environmental fiscal reform, green public procurement, certification of sustainable production and trade and inclusive green social enterprise and green innovation and payments

for ecosystem services (PES) are some of the proposed biodiversity and the environment related sources for financing for the UGDS.

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP) (2015-2025)

The framing of Uganda's NBSAP and its overarching principles exhibit an integrated approach to biodiversity conservation and development, as encapsulated in the theme of the plan "Supporting transition to a middle income status and delivery of sustainable development goals".² In particular, this is demonstrated in Overarching Principle B: "Mainstreaming of biodiversity conservation, sustainable use of biological resources and equitable sharing of benefits from biological resources into existing policy, legislative, institutional and development frameworks as appropriate" The formulation of the NBSAP was guided by Uganda's National Vision 2040 and NDP II. Furthermore, linkages between the NBSAP, NDPII, National Vision 2040, Sustainable Development Goals and the Strategic Plan for Biodiversity 2011-2020 are well articulated in the NBSAP, including key areas where the NBSAP can make contributions towards complementary policies and processes in Uganda.

Table 0.1: NBSAP 2: Key contribution areas towards Vision 2040, NDPII and SDGs

Vision 2040	NDPII	SDGs
Green Economy: poverty eradication, sustained economic growth, creating opportunities for employment, maintaining the healthy functioning of ecosystems	Theme: Strengthening Uganda's Competitiveness for Sustainable Wealth Creation, Employment and Inclusive Growth Goal -to attain middle income status by 2020	Goal 1. End poverty in all its form everywhere Goal 2. End hunger, improve nutrition and promote sustainable agriculture
Protection and sustainable use of natural resources: promoting re-forestation, afforestation, tree planting and green agriculture practices; restoration of wetlands, hilltops and other fragile ecosystems Sharing of environmental costs and benefits: conservation of ENR and cultural diversity; adoption of environmental patterns of production and consumption; promotion of the development, adoption and equitable transfer of environmentally sound technologies	Development objectives -Increase sustainable production, productivity and value addition to key growth opportunities Priority sectors: Agriculture, tourism, minerals, oil and gas ° ENR Objectives Objective 1: Restore and maintain the integrity and functionality of degraded fragile ecosystems Objective 2: Increase the sustainable use of ENR Objective 3: Increase wetland coverage and reduce degradation Objective 5: Increase Uganda's resilience to the impacts of climate change ° Objective 6: Increase afforestation, reforestation, adaptation and mitigate	Goal 5. Attain gender equality, empower women and girls everywhere. Goal 6. Ensure availability and sustainable use of water and sanitation for all Goal 12. Promote sustainable consumption and production patterns Goal 13. Tackle climate change and its impacts Goal 14. Conserve and promote sustainable use of oceans, seas and marine resources Goal 15. Protect and promote sustainable use of terrestrial ecosystems, halt, desertification,

² Uganda's NBSAP principles a) on "sustainable development and environmental sustainability", b) on "mainstreaming of biodiversity conservation, sustainable use of biological resources and equitable sharing of benefits from biological resources into existing policy, legislative, institutional and development frameworks as appropriate" and h) on equal consideration of the three objectives of the CBD – conservation; sustainable use; and benefit sharing arising from the use of biological resources.

	deforestation for sustainable development	land degradation and biodiversity loss
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THE NBSAP AND DEVELOPMENT

The NBSAP has a dedicated section on the importance of biodiversity to national development and poverty eradication which describes the contribution of biodiversity to agriculture, forestry, wildlife and tourism, wetlands, fisheries resources, wetlands and human health. The NBSAP also has a section on new and emerging issues which highlight important sector development issues in Uganda such as climate change, oil exploration and production in the Albertine Graben, production of biofuels, natural disaster management, green procurement and biotechnology and biosafety. These sector development issues can impact biodiversity negatively but also provide opportunities to minimise damages to biodiversity and maximise the positive contributions of these sectors to biodiversity.

The NBSAP makes several references to the importance of sustainable use of biodiversity and other natural resources and equitable sharing of costs and benefits of biodiversity in the context of development. Pressure on biodiversity due to poverty, and the contribution of biodiversity to poverty reduction, are key themes of the NBSAP. Several targets and indicators aim at poverty alleviation through livelihood generation and stakeholder involvement. References to poverty and development in NBSAP implementation target –indicator matrix are covered in activities proposed under Strategic objective 3, national target 3.1 which seek to promote protected areas as core drivers for nature-based tourism development in the local economy (3.1.2), support gender-responsive alternative livelihood options for communities adjacent to protected areas, (3.1.4), mitigate human wildlife conflicts (3.1.6) and strengthen partnerships with adjacent communities to protected areas for mutual benefits (Supporting REDD+) (3.1.7).

Under Strategic Objective 4, to “promote the sustainable use and equitable sharing of costs and benefits of biodiversity”, proposed activities include identifying and supporting women groups to adopt more sustainable alternatives for household and income-generating activities to enhance livelihoods and biodiversity conservation (4.1.2), to integrate biodiversity accounting into national accounting and reporting processes in pursuit of incentives for conservation and sustainable use (4.1.6), promote public private partnerships to collect, harvest and process plant based products for commercialisation and support value addition on plant based products for commercialisation by local community groups (4.2.1 and 4.2.2).

ENTRY POINTS FOR NCA

Targets and actions in Uganda’s NBSAP provide clear entry points for natural capital accounting. NBSAP target 1.1 requires that “by 2020, biodiversity values integrated into the National Development Plan, Budget Framework Papers, Ministerial Policy Statements and District Development Plans”. Proposed actions under this target include developing and using biodiversity and ecosystem services valuation tools to quantify and monitor the environmental, economic and social value of biodiversity as well as to mainstream biodiversity into decision making and to develop a business case for biodiversity (1.1.6 and 1.1.8), developing guidelines for mainstreaming biodiversity into national, sectoral and district plans (1.1.7), and mapping of the status and trends of ecosystems (especially forests, wetlands and rangelands) (1.1.9).

Also Target 4.1 requires that “by 2020, appropriate incentives for biodiversity conservation and sustainable use are in place and applied”. Proposed actions under this target include developing economic instruments to encourage activities that enhance biodiversity conservation and discourages activities that impact negatively on biodiversity (4.1.1), introducing pro-poor environmental taxes and levies and market-based instruments (4.1.3) and integrating biodiversity accounting into national accounting and reporting processes (4.1.6). One of the actions under target 4.1 addresses gender issues –i.e. requires identifying and

supporting women groups to adopt more sustainable alternatives for household and income-generating activities to enhance livelihoods and biodiversity conservation (4.1.2).

In addition, NCA will also directly support the achievement of the following Uganda NBSAP Targets:

- 3.1 (Aichi Target 11) by identifying opportunities for conservation and socio-economic development, via activities such as sustainable harvesting and wildlife-based tourism in expanded protected areas.
- 3.2 (Aichi Target 15) by fostering investments to restore ecosystems to increase socio-economic benefits, carbon storage and ecosystem resilience.
- 3.5 (Aichi Targets 5 and 14) by fostering sustainable use of biodiversity-related natural capital by providing economic justification to halt habitat loss/degradation.
- 4.2 (corresponds to Aichi Target 13): by identifying natural capital assets that can support sustainable wild harvesting of plant-based products, and capturing their contribution to the economy and poverty alleviation.
- 5.1, 5.2 and 5.3 (Aichi Target 1) by increasing awareness of biodiversity and its benefits via communications elements of the project and potential integration of outputs into university.

RESPONSIBILITY FOR IMPLEMENTATION

The institution responsible for overall coordination of the implementation of the NBSAP is the National Environment Management Authority (NEMA). However, other important strategic institutions and stakeholders have been allocated actions either as a lead agency or partner institution as presented in the NBSAP's target-indicator matrix. These institutions include the National Planning Authority (NPA), Uganda Wildlife Authority (UWA), National Forestry Authority (NFA), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Energy and Mineral Development (MoEMD), Ministry of Finance, Planning and Economic Development (MoFPED), Forest Sector Support Department (FSSD), Ministry of Gender, Labour and Social Development (MGLSD), Uganda National Council for Science and Technology (UNCST) and National Agricultural Research Organization (NARO). Also involved are district local governments, local communities, NGOs and the private sector.

ENVIRONMENT AND NATURAL RESOURCES (ENR) SUB-SECTOR GENDER MAINSTREAMING STRATEGY (2016-2021).

The ENR Sub-Sector gender mainstreaming strategy serves as a framework and a strategic guide for gender responsive planning, implementing, monitoring and evaluation and capacity building for the ENR sub-sector in Uganda. The strategy will enhance gender equity, participation and access to and control of resources in the environment sub sector, leading to poverty reduction. It includes specific objectives to improve access and control of environmental resources, and participation in planning and sustainable management of natural resources. In Uganda, women in rural areas are highly dependent on local natural resources for their livelihoods in their role to secure water, food and energy for cooking and heating. The natural capital accounting framework can be adapted to consider local-level benefits flows by gender. The accounts compiled could be aligned with potential beneficiaries data disaggregated by gender, where available. At the planning level, this will enable sectors to identify the gender impact of identified green growth development opportunities, and to align them with the UGGDS targets. Overall, given the greater dependence of women on natural resource based activities in Uganda, the project is expected to contribute to their improved well-being by generating information for the better management of the natural resources (e.g. Shea production by the women's cooperative [BeadforLife](#)).

RELEVANT SECTORAL POLICIES

There are a number of national policies that relate to the environment, including the National Environment Policy, the Energy Policy, the Water Policy, the Agriculture policy and other policies related to forestry,

marine resources, tourism, biodiversity, and watershed areas.³ These policies address, in varying degrees, development, poverty and livelihoods issues that are associated with biodiversity. In order for these policies to be effective, they require data and information on biodiversity and its role in addressing these issues, which could be provided by NCA. Some of these policies are ripe for revision and the new policies will be more evidence based in future when NCA accounts are compiled and published.

UGANDA'S DRAFT MINING AND MINERAL POLICY FOR UGANDA 2018

The recent discoveries of oil and other important minerals such as iron ore, marble/limestone, nickel, cobalt, copper, chromium, gold and phosphate makes Uganda's Mining and Mineral Policy (in draft) of interest given the potentially negative impacts of oil exploration and mining in Uganda. The policy aims to increase the development of Uganda's Minerals and Mining sub-sector in a cost effective and efficient manner, through increased investment, value addition, national participation and revenue generation to contribute significantly to eradication of poverty and promote socio-economic transformation in line with Vision 2040. The Policy is expected to underpin socio-economic growth on a sustained basis, and is aligned with the recommendations made in the NDP II and the African Mining Vision 2040 to positively contribute to all 17 of the Sustainable Development Goals (SDGs).

Environmental considerations feature in the policy document. The policy recognises that the mining industry in Uganda shall strive and adopt the principles of sustainable development to maximise social and economic benefits without compromising environmental sustainability for the benefit of present and future generations. Enhancement of sound health, safety and environmental protection in the mining industry to avoid, minimise and mitigate health, safety and environmental impacts in exploration and mining activities in accordance with existing relevant laws features in the guiding principles, core priority areas and strategic objectives of the draft policy.

Strategic objective 6 of the policy proposes the establishment of a mechanism to monitor and enforce compliance to health, safety and environmental standards. The policy also notes that mining sector in Uganda shall coordinate with lead agencies to develop specific environmental, health and safety legislative, regulatory frameworks and standards for the mining sector and streamline it with the national Environment and other relevant laws with an emphasis on environmental performance, ecological sensitivity and sites of historical importance among others. Also the policy clearly states that mining in forests and wetlands shall ensure conservation of ecosystems and biodiversity.

The Ministry of Energy and Mineral Development has the main responsibility of overseeing the implementation of this Policy. However, the actual implementation will be the preserve of key sector stakeholders including private sector. The Government of Uganda will also put place an inter-sectoral coordination committee to support implementation of the policy. The policy notes that environment and biodiversity institutions such as NEMA, Uganda Wildlife Authority (UWA) and National Forestry Authority (NFA) will be part of the inter-sectoral coordination committee. The monitoring and evaluation system of the policy will be linked to other national level monitoring processes of the NDPII and NCA can provide information to help with monitoring and evaluation.

For instance, the water account will be informative to the water policy, agriculture policy and energy policy (especially on hydro-electricity). The forest policy, tourism, biodiversity and watershed areas will receive inputs from the forest accounts, biodiversity and water accounts. All these will be available upon implementation of NCA and compilation of respective accounts in Uganda.

³ National Environmental Management Policy (1994), National Wetlands Policy (1995), Fisheries Policy (2003), Tourism Policy (2013), National Agriculture Policy (2013), Uganda National Climate Change Policy (2013), Uganda Wildlife Policy (2014), Uganda Forest Sector Policy (2001) and National Forestry Plan (2011/12 – 2021/2022) and National Community Development Policy (2015).

AGRICULTURE SECTOR STRATEGIC PLAN 2015/16-2019/20 “DRAFT”

The agriculture Strategic Plan recognises the sector’s dependence on the environment, including biodiversity. However, the environmental impacts and dependencies are neglected in the majority of the strategy, highlighting the potential significant contribution of NCA to help it be taken into account in future agriculture policies and planning.

FORESTRY POLICY

Biodiversity is considered throughout Uganda’s forestry policy, as important both for human health and wealth. However, this policy was produced in 2001, and as such the idea of valuation and accounting was less widely known and is hence not included in the policy. NCA, however, could inform future revisions of the forestry policy, guiding priorities and providing the business case for its protection.

NATIONAL WETLANDS POLICY

Despite dating back to 1995, Uganda’s National Wetlands Policy recognises the socio-economic functions of wetlands in its aim, and its fifth and final goal promotes the recognition of wetland functions in resource management and economic development decision-making with regard to sector policies such as forestry, agriculture, fisheries, wildlife and sound environmental management. This demonstrates a clear role for NCA in supporting and informing wetland policy in Uganda, and in helping understand priorities and trade-offs with other sectors.

NATIONAL WATER POLICY

Again dating back before the concept of NCA was widely used and understood, the policy demonstrates clear potential for NCA to inform and add value to future revisions. For example, the policy recognises the prevalence of conflicts between upstream and downstream water users; NCA could help better understand these conflicts, plan interventions and monitor effectiveness. NCA could also help understand cross-sectoral links and trade-offs, such as with agriculture, for wildlife and recreation, as the policy identifies.

WORKS AND TRANSPORT SECTOR DEVELOPMENT PLAN 2015/16-2019/20

Again this policy dates back over 20 years. It clearly recognises that EIAs and environmental studies are the main means of regulating impacts on the environment and thus biodiversity, and MWE/NEMA have the responsibility of approving these, demonstrating a clear potential entry point for NCA.

UGANDA’S POLICY ON ENERGY AND POWER

The main goal of this policy is to meet energy needs in an environmentally sustainable manner, and one of its objectives is to manage energy-related environmental impacts. It provides a clear commitment to increase renewable energy (from 4% to 61% between 2007 and 2017). It obliges fossil fuel companies to mix products with biofuels up to 20%. Thus the policy has clear links to the agriculture sector, and there is potential for NCA to inform any revision of such targets and to review progress towards goals and objectives.

INTERNATIONAL COMMITMENTS

Uganda is committed to achieving the Sustainable Development Goals (SDGs). The SDGs explicitly recognise that biodiversity loss and ecosystem degradation are exacerbating the challenges men and women face and that social and economic development therefore depends on sustainable use of natural assets. Reflecting this, SDG 15 provide a list of targets (many of which are aligned with the Aichi Targets)

that reflect conservation and sustainable use of biodiversity and, therefore, that NCA could inform. These include: 15.1, 15.2, 15.3, 15.4, 15.5, 15.6 and 15.9 - see King *et al.*, 2018 for a full analysis of these entry points). In addition, the type of integrated information on biodiversity and well-being that NCA can provide can support a range of biodiversity mainstreaming opportunities relevant to the SDGs. For example, identifying opportunities for investments in natural capital restoration or access to stimulate economic activity and address poverty, thereby supporting SDG8 and SDG1. NCA can also promote more holistic planning approaches at sector level (e.g., for agriculture, SDG2), improving the delivery of ecosystem services relevant to water (i.e., for water supply and sanitation, SDG 6) and for sustainable production and consumption (e.g., for the forestry sector, SDG12).

Uganda is also a signatory to a number of international conventions on which they must report progress. This includes the Convention on Biological Diversity and its Aichi Biodiversity Targets, of which Aichi Target 2 is of particular relevance. Uganda's strategy to achieve these targets is well articulated via its NBSAP (as described earlier). In addition, there other reporting requirements where biodiversity is clearly relevant and NCA can contribute. For instance, reporting on land degradation to the UN Convention to Combat Desertification (UNCCD), calculating indicators relevant to progress under the UN Framework Convention on Climate Change (UNFCCC) or Ramsar conventions and supporting processes such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

Uganda is also a member of the UN Environment Assembly. NCA work in Uganda will respond to a request by Parties in UNEA Resolution 2/13 specifically relating to natural capital, capacity building and technical assistance. The resolution calls on Member States to recognise the importance of integrated, holistic and balanced natural capital approaches for enhancing the capacity for management of natural resources and for promoting sustainable development and poverty eradication in a coordinated and effective manner. These could be achieved through increasing awareness of the appreciation and value addition of natural capital resources, building capacities to integrate the valuation and accounting of natural capital and natural resource contributions into national planning and decision-making for sustainable development, and incorporating incorporate information and knowledge on natural capital analyses into national accounts, development planning and decision-making, especially through implementing the System of Environmental-Economic Accounting (UN SEEA) among others, in order to improve the sustainable use of natural resources for sustainable development

OTHER PROGRAMMES AND INITIATIVES FOR BIODIVERSITY INTEGRATION

STATE OF ENVIRONMENT REPORT

Uganda under the National Environmental Management Authority (NEMA) releases biannual State of the Environment (SOER) Reports on the status of the environment. NCA could help to enrich this report, by improving the data and indicators to reflect the priority Sustainable Development Goals (SDGs) and green growth strategy for Uganda as a country. Data from the forest accounts, biomass data, land use/cover and change, and water accounts can provide useful inputs into the SOERs. Also, the National Biodiversity Data Bank at Makerere University in Uganda in collaboration with NatureUganda, World Conservation Society and Uganda Wildlife Authority produces a report on the State of Uganda's Biodiversity which show how various sectors are performing in relation to biodiversity. NCA can provide information to help in producing indicators for this report.

UGANDA NATURAL CAPITAL FORUM

In 2018, Uganda established an informal Natural Capital Forum whose main aim is to facilitate the process of institutionalising natural capital accounting in Uganda. The establishment of the Forum is timely given the numerous infrastructural upgrades and proposed construction in Uganda such as the Uganda-Tanzania Crude Oil Pipeline (UTCOP) which potentially have high negative impact on key biodiversity areas. This requires decision makers in government to take into account mitigation measures that will reduce these

impacts on natural capital. Also there is an interest on the natural capital approach in government departments (e.g. National Planning Authority, the Bank of Uganda, NEMA, Uganda Bureau of Statistics (UBOS)), the Ministry of Finance, Planning and Economic Development (MoFPED)) and the Forum could help to push and advance a number of commitments on NCA in Uganda.

GREEN ECONOMY COALITION HUB

The Green Economy Coalition, with European Commission (EC) support, facilitates dialogue and action research processes in seven developing countries, including Uganda. The GEC's principal role is to complement 'top-down' policy formulation on green economy with 'bottom-up' societal dialogue and demand processes – responding to the observation that transformational change results from both national leadership and clear societal demand. The GEC Hub in Uganda is run by the Advocates Coalition for Development and Environment (ACODE). An independent public policy, research, and advocacy think tank, ACODE is the hub for the GEC's work in the region, helping to

- Build an engaged network of citizens, charities, and organisations working on the green transition across Uganda and the East African region
- Research new tools for policy-makers to support inclusive, sustainable green development
- Engage politicians and the private sector on the opportunities and options for green growth

The Uganda Hub's research has found that green economic policies could boost GDP by as much as 10%, delivering an extra US\$3.4 billion in growth by 2020, all while creating 4 million new jobs and reducing carbon emissions by almost a third. But there is still much to be done: despite impressive economic growth in recent years, Uganda remains one of the 20 poorest countries in the world. One of the Hub's principal tools, intended to both drive and monitor progress, is the '[Uganda Green Economy Barometer](https://www.greeneconomycoalition.org/national-hubs#uganda)': natural capital management and development is one of the five themes it tracks – with progress in NCA development, use and integration one of the practical priorities to be assessed. (<https://www.greeneconomycoalition.org/national-hubs#uganda>).

GABORONE DECLARATION FOR SUSTAINABILITY IN AFRICA

The Gaborone Declaration for Sustainability in Africa (GDSA) was established in 2012 as an African action platform for sustainable development by ten African Heads of State. Uganda has been associate member of the GDSA since 2015. In 2017, the GDSA member countries welcomed Uganda's expression of interest in becoming a full signatory member in the Maun Ministers' Statement (GDSA, n.d.). Under the GDSA, member countries have voluntarily committed to make progress on integrating the value of natural capital into natural accounting processes and public sector decision-making.

The future focus areas for Uganda set out in the MWE (2017a) report on the implementation of the GDSA are highly relevant to NCA and its potential for integrating information the benefits biodiversity provides into economic planning and poverty alleviation. Specifically, they comprise the following:

- Integrate the value of natural capital into national accounting and corporate planning and reporting processes, policies, and programmes, in agreed efforts.
- Build social capital and reducing poverty by transitioning agriculture, extractive industries, fisheries and other natural capital uses to practices that promote sustainable employment, food security, sustainable energy and the protection of natural capital through protected areas and other mechanisms.
- Build knowledge, data, capacity and policy networks to promote leadership and new model in the field of sustainable development and to increase momentum for positive change.

IMPLEMENTATION INSTRUMENTS – MACHINERY OF GOVERNMENTS

There are several national, as well as international, sources for financing biodiversity management. These reflect financing conservation priorities, as well as supporting the integration of biodiversity in to sector economic planning, development and climate adaptation. The finance sources and plans for these activities in Uganda are summarised below.

UGANDA 2018 BUDGET

Biodiversity depended sectors such as tourism, agriculture and water and sanitation feature in Uganda's Budget for 2018, which prioritised environment/biodiversity dependent sectors. The budget committed to (1) develop Uganda as a regional hub for biodiversity and cultural tourism, (2) implement measures to commercialise and increase productivity in the agriculture sector including strengthening measures to protect the environment to avert climate change effects on food security - tree planting and wetland restoration, and (3) develop water and sanitation infrastructure and protection of environmental and ecological systems. However, the budget also prioritises sectors such as oil and gas and transport that have the potential to impact negatively on biodiversity. Developments of interest from a biodiversity point of view include commencement of construction of the Kabaale (Hoima) Airport and the East Africa Crude Oil Pipeline and Refinery, construction of 600 km of "oil roads", upgrading 400 km of roads to tarmac, rehabilitating 200km of existing tourism roads, construction of 15 bridges, re-development of Entebbe International Airport and completion of Karuma and Isimba hydro power projects.

GUIDELINES AND ACTION PLAN FOR FINANCING BIODIVERSITY CONSERVATION IN UGANDA 2015 -2025

Uganda has also developed Guidelines and Action Plan for Financing Biodiversity Conservation. The guide is supporting the mobilisation of resources for implementing Uganda's NBSAP and other biodiversity related programmes in the country. It is also being used to provide guidance to the Ministry of Finance, Planning and Economic Development (MoFPED) in the allocation of resources for biodiversity conservation during government planning and budgeting processes.

The importance of biodiversity to socio-economic development and livelihood improvement in Uganda features in the guidelines. Priority areas with a development/poverty focus in the action plan matrix of the guide include: the integration of environmental sustainability concerns into the planning and development processes; value addition to environment and natural resources (ENR) goods and services; promotion of sustainable consumption and production; and climate change induced environmental disasters response management.

Development-related priority interventions include developing and implementing mechanisms for the promotion of Payment for Ecosystem Services (PES), developing and implementing awareness programmes on opportunities of ENR for employment and wealth creation, supporting mainstreaming and integration of environmental concerns into policies, plans, programmes and budgets (capacity building, tools/instruments for environment mainstreaming), promoting environmental valuation and resource accounting to demonstrate the contribution of ENR and the costs of its degradation to GDP and development goals, supporting the implementation of national initiatives on transition to a green economy (low carbon emissions and pollution levels, resource use efficiency, conservation agriculture, inclusive and equitable growth and enhanced natural capital base).

Key performance targets in the action plan matrix include the economic valuation of key natural resources like soils, minerals, wetlands, water resources is done and integrated into sector plans and budgets, development of National Green Accounting System and National Green Economy Indicators, number of natural resources valued and integrated into sector plans and budgets and the economic values of key natural resources integrated into Gross Domestic Product GDP, and the oil and gas environmental monitoring plan effectively implemented by all the responsible lead agencies

STRATEGIC PROGRAM FOR CLIMATE RESILIENCE (SPCR) UNDER THE PILOT PROGRAM FOR CLIMATE RESILIENCE (PPCR)

Uganda was selected by the Climate Investment Funds (CIF) in May 2015, as one of the second round of countries to prepare the Strategic Program for Climate Resilience (SPCR) under the Pilot Program for Climate Resilience (PPCR). The PPCR was designed to pilot and demonstrate ways to integrate climate risks and resilience into core development planning in developing countries. In January 2016, the CIF approved a preparatory grant to support the Government of Uganda (GoU) to prepare its SPCR. The SPCR is being prepared in alignment with the country's development visions and blue prints such as the National Vision 2040, the National Development Plan II (NDP II, 2015-2020), the National Climate Change Policy (NCCP, 2015), Uganda Green Growth Development Strategy (UGGDS) (2015-2030), and the global Sustainable Development Goals (2016-2030), as well as priority strategies and plans of relevant sectors in the ministries, government departments and agencies. The SPCR will contribute to the PPCR objective of mainstreaming of climate concerns into Uganda's development programmes and will specifically contribute towards achievement of the Nationally Determined Contributions (NDC) commitments. Some of the prioritised investment projects for the Uganda SPCR include enhancing climate resilient agricultural production and food security and integrated sustainable management of landscapes and catchments for improved livelihoods, ecosystems and community resilience. NCA can provide the framework for calculating indicators to monitor and track progress in improving these aspects of climate resilience at multiple scales.

BIODIVERSITY FINANCE INITIATIVE (BIOFIN) PROJECT (2014 –2017)

Uganda is also participating in the Biodiversity Finance Initiative (BIOFIN) project and has produced a biodiversity expenditure review report. The report provides comprehensive information on financing biodiversity conservation and management, from the fiscal period 2005/6 to 2014/15. The review evaluated the effectiveness of the budget spending on ecosystems and environmental degradation. Based on the four key sectors evaluated, which include agriculture, tourism, energy and; water and environment, findings reveals that on average environment and biodiversity conservation takes up 1.2% of government's annual budget. Also, one of the major findings is that protection and restoration are the backbone of biodiversity and environmental conservation for economic development in Uganda.

The report recommends that the status of biodiversity management, and/or natural resources and ecosystem services for Uganda should be assessed regularly perhaps as part of a natural resource accounting system. Building capacity of ministries, departments and agencies and district local governments on integrated environmental economic systems with data collection and collation could be prioritised. It also recommends the government to commit to strategic plans for ecosystem management and livelihoods enhancement, directly address the high rate of deforestation, establish biodiversity flagship programmes for forestry management, catchment based water resources management, fisheries management. It also calls for the prioritisation of financing mechanism for biodiversity management and harmonisation of policy and institutional engagement on implications of the biodiversity finance plan at national level to ministries, departments and agencies and district local governments and parliament, and at sub-national level to district local governments and urban authorities through joint design, joint implementation or information sharing, monitoring and valuation platforms.

UNITED NATIONS DEVELOPMENT ASSISTANCE FRAMEWORK (UNDAF) FOR UGANDA (2016 – 2020)

Twelve UNDAF outcomes have been designed to trigger sequential transformation in Uganda. UNDAF Outcome 3.1 focuses on Natural Resource Management and Climate Change Resilience in the context of achieving Sustainable and Inclusive Economic Development. It stresses gender responsive, effective and efficient natural resources management and energy access, reducing emissions, negating the impact of climate induced disasters and environmental degradation on livelihoods and production systems, and

strengthening community resilience. The UNDAF also emphasises the importance of environmental protection, restoration of fragile ecosystems, climate change resilience and related regulatory instruments as key components for achieving the Uganda Vision 2040. The UNDAF specifically identifies that these should be established early during the NDPII/UNDAF cycle to minimize the negative impact of mining on ecosystems and biodiversity, while also creating conditions for continuous diversification. Some of the planned interventions to achieve Outcome 3.1, where this review suggests NCA can contribute, include:

- Strengthening the capacity of the NPA to guide and coordinate the integration of biodiversity and sustainability issues into sectoral and local government development plans
- Strengthening technical and functional capacity of NEMA to coordinate monitoring and reporting on the state of environment, natural resources management and climate change
- Strengthening technical, functional and financial capacity of NEMA, and line ministries for implementation of policies, strategies, plans and budgets that address sustainable energy; natural resource and land management; biodiversity conservation, climate change mitigation and resilience initiatives; wastes and chemicals
- Strengthening technical, functional and financial capacity of NEMA, Uganda Wildlife Authority (UWA), National Forest Authority (NFA), Ministry of Water and Environment (MWE) in ecosystems management for enhanced livelihoods and food security
- Providing technical and functional capacity to ministries and development agencies to integrate climate change adaptation and mitigation measures in national and sub-national strategies for increased resilience and food security

MAIN POLITICAL ISSUES FOR BIODIVERSITY INTEGRATION IN UGANDA

This section has been developed based on the Political Economy Analysis conducted under the GEF Connect Project.

Oil and Gas: Oil and gas resources are widely found in biodiversity-rich areas, particularly the Albertine rift area, which leads to conflicts of interest. The economic gains from oil and gas are favoured by local governments at the expense of forests, wildlife, water and fisheries, and provisions for offsets are inadequate. Infrastructural developments such as the construction of the Uganda–Tanzania Crude Oil Pipeline (UTCOP), intended to transport crude oil from western Uganda to the Port of Tanga, Tanzania on the Indian Ocean, pose a threat to biodiversity. The pipeline is expected pass through some sensitive ecosystems and high value conservation areas.

Environmental Impact Assessment Process: There is limited transparency and coordination among the Government Ministries, Departments, and Agencies (MDAs) when it comes to processes in Environmental Impact Assessment (EIA). As a result, projects in fragile ecosystems such as wetlands continue to be approved (MWE 2017b) and this creates mistrust between stakeholders.

Sustainable forest management: The district forestry services are mandated to collect forest revenues from Local Forest Reserves and private forests, but do not have a legal obligation to verify the origin of forest products. As such, timber dealers can acquire transport license from the DFS, and then use these to transport illegally sourced products (Tumusiime, Byakagaba, and Tweheyo 2018; Waiswa, Stern, and Prisley 2015).

Infrastructure planning: The National Planning Authority prioritises infrastructure development, often passing through fragile ecosystems in order to avoid settlements (and associated high compensation costs). New roads then promote roadside businesses (such as markets, taxis or horticulture) which encroach further into the fragile ecosystems.

Agriculture sector: Some incentives of the agricultural sector conflict with the main objectives of environmental policies, e.g. intensification of rice in wetlands conflicts with the objectives for the wetland

policy and Climate Change Policy. Also, the NAP (2013) aims to promote mechanisation and large-scale farming, but contains no safeguards to prevent potential deforestation in achieving this aim.

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APPENDIX B: STOCK-TAKE OF NCA IN UGANDA

Natural capital accounts are a set of objective data on the stocks of natural resources, including ecosystems, and the flows of benefits they provide. They aim to provide detailed integrated statistics on how natural resources contribute to the economy and how the economy affects natural resources. By organising and integrating information on the environment, society and the economy, NCA can inform a holistic approach to natural resource use, which will address the social, environmental and economic aspects of sustainable development. In recent years, natural capital accounting (NCA) has become a prominent tool for providing more evidence-based approaches to improve policy decisions. In particular, the potential for NCA to improve policy decisions in the following areas was clearly established at the World Bank Policy Forum (Vardon *et al.*, 2017).

- Attainment of the Sustainable Development Goals and their targets (including relevant Aichi Targets)
- Green Growth or Green Economy Transition
- Climate change adaptation and mitigation

In addition to these high-level cross-cutting policy agendas, NCA applications have demonstrated their value in a range of more sector-orientated policy themes. These include via the use of Natural Capital Accounts for Mineral Production, Land Accounts, Forest Accounts, Energy Accounts and Water Accounts, for which statistical standards are now reasonably well defined via the UN System of Environmental Economic Accounting (SEEA) Central Framework (UN *et al.*, 2014). Furthermore, continuing experimentation and development of NCA for ecosystems and their benefits (via the UN *et al.*, (2014b) SEEA Experimental Ecosystem Accounting framework) has gathered momentum and is now improving the evidence base for a range of policy decisions in the environmental sector, such as ecotourism, ecosystem based adaptation and biodiversity (e.g., for delivery of NBSAPs). The following section provides a brief overview of the development of NCA and implementation of NCA and the SEEA in Uganda.

HISTORY OF NCA IN UGANDA

A significant legacy and awareness of the role for natural capital accounting in improving natural resources management for sustainable use and benefits exists in Uganda. The National Environmental Management Plan (1994) explicitly calls for the development satellite environmental accounts following the first edition of the SEEA framework in 1993. Addressing this and the plethora of other policy entry points discussed above a number of projects relevant to NCA have been implemented in Uganda over the past 25 years. Building on capacity strengthened through previous accounting efforts and targeting key policy entry points, a National Plan for Advancing Environmental-Economic Accounting (NP-AEEA) in Uganda has been developed as part of a coordinated effort between UBOS, United Nations Statistics Division (UNSD), NPA, NEMA and other Ministries, Departments and Agencies.

Reflecting on information in the draft NP-AEEA, conversations with key individuals and work to date, this section is intended to identify how NCA (or similar) have been used and by whom, the specific capacities and resources that have been built and where a legacy of continued regular production has been achieved. The purpose of this review is to inform on the profile for real-life demands for NCA in Uganda, particularly with respect to improved management of biodiversity management and poverty alleviation.

FOREST ACCOUNTS

Typically, NCA to date, both in Uganda and elsewhere, has adopted a thematic approach, focussing on specific ecosystems or resources. Deforestation has been a particular concern in Uganda, due to its impacts on biodiversity, reliance of rural communities on the benefits forests provide and due to the potential externalities deforestation can have on society and other economic activities (e.g. via soil erosion).

Responding to demands for information on the trends of Uganda's forest assets, the benefits they confer and a fuller accounting of their contributions to the economy two Forest Resource Accounting studies have been completed. These comprise a set of accounts produced by ENR Africa Associates under the auspices of NEMA and with support from the World Bank (NEMA, 2011) and a second set of more recent Forest Resource Accounts produced by Prime Africa under the auspices of the MWE and UN-REDD Programme (Oliveria *et al.*, 2018). NEMA (2011) also identifies that initial attempts to compile National Forest Accounts were also undertaken in 2005. However, these stalled due to limited data and technical capacity.

The specific objectives of NEMA (2011) were to: determine the physical stocks and flows of forestry resources in Uganda; determine the monetary value of the physical stocks and flows of forestry resources in Uganda; and to estimate the aggregate contribution of forestry resources to the national economy. Similarly, the specific objectives of Oliveria *et al.*, (2018) were to inform analysis of the economic value of Uganda's forest resources, where possible, and demonstrate some policy instruments that would alleviate pressure on these natural forest systems. NEMA (2011) grounded in the methodology proposed by Lange (2004)⁴ – this is essentially a Forest Sector manual for the SEEA-CF (2003 version) and considered a precursor to the current World Bank Forest sourcebook.⁵ The Forest Resource Accounts produced by Oliveria *et al.* (2018) were also based on the UN Stats SEEA.

Both sets of accounts include physical and monetary estimates for a broad range of timber and non-timber provisioning services from forests, in addition to several cultural and regulating services. Common to both sets of accounts were consideration of carbon storage/sequestration services and soil protection services, as well as accounting for biodiversity stocks and their value. In addition, NEMA (2011) account for recreational services from forests and Oliveria *et al.*, (2018) for the malaria protection, water quality maintenance, inland fisheries protection and hydropower capacity protection services provided by forests. The inclusion of biodiversity-related accounts in both studies should allow for more integrated planning that considers the tradeoffs inherent with biodiversity under different land-use options. To assist such this type of decision-making, both sets of accounts provide some level of disaggregation of national data. Specifically, NEMA (2011) presents some findings by specific forest areas or reserves. Oliveria *et al.* (2018) appear to present results by watershed management area. Nonetheless, this could be considered reasonably coarse for supporting on-the-ground planning purposes.

The commercial forest sector is relatively small in Uganda, representing approximately 2% of GDP in 2010 (Oliveria *et al.*, 2018). Both sets of accounts highlight the economic contribution of forests in terms of forest products, other ecosystem services and biodiversity protection to the economy is significantly higher (8.7% of GDP, NEMA, 2011), highlighting the case for investment in the maintenance of forest assets.

The information collated in the forest accounts by NEMA (2011) continues to influence forest sector reporting and planning (see MWE, 2016). Oliveria *et al.*, (2018) employ the Forest Resource Accounts, together with environmentally extended input output and macroeconomic analysis, in order to inform on a range of possible policy Responses to address deforestation in Uganda. This provides an interesting combination of both retrospective accounting outputs and their use in supporting *ex ante* decision making. The NP-AEEA recognizes the importance of moving to regular production of Forest Accounts for these purposes. As such Forest Accounts are identified as one of a set of high priority SEEA accounts to develop in Uganda under this plan (alongside water and energy accounts).

BIOMASS AND LAND COVER

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https://www.wavespartnership.org/sites/waves/files/documents/ManualForEnvEconAccForForestry_ToolCross_culturalPolicyAnalysis_GML_2004.PDF

⁵ https://www.wavespartnership.org/sites/waves/files/kc/forest_resourcesbook.pdf

The National Biomass study started in 1989 with a view for monitoring the dynamics of woody biomass in Uganda. The project is run by the National Forest Authority (previously the Forestry Department of MWLE) and has been financially supported by the Norwegian Agency for Development Cooperation (NORAD). The project provides national land cover maps based on the FAO Land Cover Classification Scheme (LCCS). Ground-truthing and biomass surveying is also employed to establish biomass values per hectare for different land cover classes (Diisi, 2009). The project is intended to provide the information required by decision makers for planning better use of biomass energy resources, a key ecosystem service for many Ugandans. Given the importance of forests and woodlands to the provision of this resource there are clear overlaps with some of the statistics on standing stocks and ecosystem services that would be presented in Forest Accounts.

The first national land cover map for Uganda was produced by the project for 1990 and has subsequently been updated in 2005, 2010 and 2015. These maps provide a robust time-series for constructing spatially defined accounts of land cover change. Two reports have been produced drawing on these maps, which essentially provide an initial land-cover account for 1990 (Drichi, 2002) and an account of land-use change for 1990 to 2005 period by the National Forest Authority (Diisi, 2009).⁶ UNEP-WCMC & IDEEA (2016) draw on the 2010 and 2015 editions to extend the time series of these land cover accounts. These land accounts are grounded in a fully spatial approach that the land-cover maps support (i.e., accounts could be compiled for any area in Uganda based on aggregations of the 1 hectare resolution data of the underlying land cover maps). As such, they also provide information for understanding the delivery of other key forest and woodland ecosystem services, such as provision of fruit, building materials, natural hazard protection and erosion control, as well as identifying the trends in habitats rich in biodiversity⁷ (Diisi, 2009).

Both Drichi (2002) and Diisi (2009) present assessments of Biomass Standing Stocks. Diisi (2009), provides a spatial comparison of the biomass stocks between 1990 and 2000. This could be considered equivalent to a capacity account for biomass provision in Uganda for this period. There does not appear to be any National Biomass Studies based on the land cover maps produced for 2010 and 2015.

Diisi (2009) identifies the land cover maps produced for 2005 (and 1990) as public goods that can be used to support multiple analyses and for different decision making processes. As a specific example, they have been used in reporting on the extent of forests in the biannual State of the Environment Report produced by NEMA. This also reflects the ambitions of national statistics and accounts generally. The spatially explicit nature of the biomass study also allows for specific land-use management recommendations to be formulated, for instance where biomass stocks are low and investment in woodlots would have the most public benefit, where tighter and more active controls are required to address deforestation and how to support REDD and land management for sustainable development generally.

SEEA energy accounts are also highlighted as priority accounts in the NP-AEEA. The ambition for these accounts is to include biomass, alongside other energy sources including: hydro-energy, fossil fuel, wind and solar energy). Regional capacity building has been provided in the compilation of energy accounts via a four day UNSD-facilitated training workshop in November 2016 (covering energy and water accounting).

WATER ACCOUNTS

In Uganda, spatial and temporal variability in rainfall is identified as a significant economic development challenge for the economy and particularly for the agricultural sector. Therefore, understanding the available supply of water and its use by different economic sectors is necessary in order to direct investments in improving water supply (e.g., via improved distribution) and balancing the social and the economic trade-offs associated with different water uses and user groups.

⁶ A first report was also produced in 1995

⁷ For example, the extent of Tropical High Forest is reported by NEMA in their biannual State of Environment Reports

The System of National Accounts only considers water assets that are under economic control. In order to account for the stocks (availability) of water abstracted from the environment to support economic activity and economic units (flows), the measurement boundary needs to be extended to include water assets that are outside of economic control / ownership. The SEEA Water framework provides a thematic application of the SEEA Central Framework to support such measurement and reporting.

The Economic Research Southern Africa provide a first set of Water Resource Accounts for Uganda using the SEEA Water (Kilimani, 2013). The accounts presented provide a picture of water flows between the environment and economy of Uganda at the national scale. These accounts appear experimental in nature and identify a surplus of water for economic use; however, investment in infrastructure is stated as being required in order to make economic use of this in agricultural production. It is also noted that further work is required in order to ensure sufficient minimal flows of water are retained for ecosystem function and other losses (e.g., from leakage) are accounted for. It is also important to bear in mind that the accounts appear to have been produced as part of a doctoral study and represent a one-off production effort.

Water accounts are highlighted as a priority for compilation in the NP-AEEA. Regional capacity building has been provided in the compilation of water accounts as part of a four day UNSD facilitated training workshop in November 2016. Building on this, UNSD have also provided technical support for the development of a pilot set of water accounts for Uganda, although these have not been published at the current time. Nonetheless, this indicates a definite step towards regular production of these accounts. These will provide a fundamental evidence base for managers interested in understanding and managing the trade-offs in meeting water demand by different economic sectors, households and directing water for economic development (e.g., moving to irrigated agriculture in some areas). This needs to be considered also in the context of maintaining the environmental water flows for functional ecosystems that provide a wide range of local and national benefits (e.g., supporting inland fisheries).

ECOSYSTEM AND BIODIVERSITY ACCOUNTING

UNEP-WCMC & IDEEA (2017) provides a set of spatially explicit experimental ecosystem accounts to inform on a set of key policy application relevant to biodiversity in Uganda. These comprise informing: on gazettement and de-gazettement of protected areas; making the case for investment in biodiversity rich sectors; establishing the extent of ecosystem degradation and where biodiversity trends threaten ecosystem service delivery; increasing awareness of biodiversity as natural capital asset; and, informing on progress towards NBSAP and National Development Plan Targets.

In order to inform on these policy applications a set of land-cover, natural ecosystem extent and species accounts were compiled. The species accounts comprised accounts of the extent of suitable habitat for key non-timber forest product (Shea Butter Nuts, Gum Arabic and *Prunus Africana*) and flagship threatened species important for wildlife watching tourism (Chimpanzees and Elephants). The fully-spatial approach employed allowed for accounts to be compiled for various accounting areas, including regions and the protected area estate. The accounts were produced in collaboration with NEMA, the NPA and the Wildlife Conservation Society of Uganda. They built on a previous Feasibility Study for Biodiversity Accounting (UNEP-WCMC, 2016) as a programme of work funded by NORAD and the Swedish International Development Cooperation Agency via UN Environment.

The Experimental Ecosystem Accounts were produced as an initial one-off exercise to demonstrate the potential of these types of accounts to support decision making and provide a suitable spatial data foundation for future ecosystem account compilation (at 1-hectare resolution). The accounts were able to integrate environmental data from multiple sources and provided key insights on the performance of the protected areas estate in Uganda, identification of where conservation and development opportunities may be realised via sustainable harvesting of non-timber forest products and yielding, multiple indicators for informing on Uganda's progress towards their NBSAP Targets and the SDGs.

The NP-AEEA identifies Ecosystem Accounting Experimentation as a building block for ensuring continuous improvement of environmental-economic accounting in Uganda. To this end, enhanced statistical coordination and capacity building for compilation of ecosystem accounts in Uganda is identified as specific outcome from implementing the NP-AEEA.

USE AND DEMANDS FOR NCA IN UGANDA

In addition to the NCA studies identified above, there exist multiple other related assessment studies that have aimed to improve the management of environmental and natural resources (aka. natural capital). A number of these initiatives have been reviewed in a scoping study progressed by the Conservation International in support of the GDSA (Reuter *et al.*, 2016); and, a feasibility study for biodiversity accounting in Uganda (UNEP-WCMC, 2016). A key conclusion that can be drawn from such a body of work is that the process of measuring the stocks of natural capital and valuing the benefits it provides is reasonably well understood as a means of mainstreaming ENR into decision-making.

The above brief review and the NP-AEEA identify an adequate knowledge base and firm foundation for implementing the SEEA in Uganda. In addition, there is a clearly a significant ongoing demand for NCA expressed in key policy documents stretching back over 20 years. However, reflecting on the NCA initiatives reviewed, the only one to achieve a repeated production is the National Biomass Programme, which spanned nearly two decades (albeit financed largely by international sources). Beyond this, the NFA have continued in their production of land cover maps, which can support accounting of land cover for 2010 and 2015. Possible reasons for this may be:

- Informing on specific objectives of the National Forestry Plan (e.g., restoring forest stocks) and the other regulatory demands for accounts on Environmental and Natural Resources set out in the National Development Plan, National Environmental Management Policy and Uganda Green Growth Development Strategy.
- A wider range of stakeholder interests exist to incentivise production, including:
 - Links between biomass and food security, economic growth and livelihoods generating demand across multiple sectors and stakeholders (biomass supplies energy to most of the Ugandan population; Diisi, 2009)
 - Demand of spatially explicit data on land cover that can support multiple analyses and purposes (e.g., tracking the extent of ecosystems rich in biodiversity)
 - Use of the land cover statistics by other agencies (e.g., SOER)
- A stated professional objective of the NFA to supply national land cover and woody biomass data for government and other stakeholders
- Responding to the increased understanding of the impacts of deforestation and degradation of forests on ecosystem resilience (including via biodiversity loss) and the associated threats to the supply of a wide range of socio-economically important ecosystem services (Diisi, 2009)
- Commitment to donor funded production over a significant period
- Developing and retaining capacity for production within an institution with a clear mandate / responsibility for production (NFA)

Whilst the capacity clearly exists within Uganda to develop biomass and related energy accounts in Uganda, there are no updates to the biomass study based on the 2010 and 2015 land-cover maps. It is likely that lack of funding via NORAD is one reason for this. Another may be that increasing availability of more modern energy sources (e.g., hydro power) require a broader consideration of environmental energy sources. Accordingly, it may be that the lack of coordinated interaction with all potential users of the accounts has been a barrier to establish a coherent set of demands for energy accounts. A similar story may well have been the case for water accounts. The NP-AEEA also provides progress towards overcoming this barrier. Furthermore, with capacity building and consultancy support via UNSD, initial water accounts are now understood to have been developed for Uganda.

Environmental agencies in Uganda are clearly keen to support the supply of natural capital accounts on key environmental themes. This is particularly the case for the forest sector, where the SNA measurement boundary for recording the contribution of forests to the economy and well-being of Uganda clearly leads to under estimation. Whilst NEMA (2011) provides the first formal accounting of this, this has been known for a significant period before this. Nonetheless, deforestation has continued (Oliveria *et al.*, 2018) despite the National Development Plan II, National Forest Policy 2001 and Tree Planting Act 2003 all aiming to address this trend. This suggests there are latent barriers to the use of this information in cross sectoral decision making. Potentially this relates to a lack of awareness, a lack of capacity to use this information or that the information is not in the required format to enter the decision-making process (i.e., Forest Accounts have been performing an advocacy role or informing macroeconomic planning but not detailed spatial or sectoral planning). These possible barriers need to be further explored through the course of stakeholder engagement in Uganda.

Accounting for ecosystems and biodiversity remains an experimental area of the SEEA. In itself, this implies that capacity and credibility constraints exist in both the production of the accounts and their use in decision-making. Nonetheless, there has been significant progress in this area over recent years, and with momentum building UNSD is coordinating a pathway towards recognising the SEEA-EEA as an international statistical standard by 2020. As such, developing demonstrable sound methodologies for accounting for these aspects of natural capital and their values is a must to provide confidence to support their use. Building this confidence will require significant engagement with users and building their capacity in understanding the accounts production and, more importantly, applications in decision-making to deliver better outcomes for people and the environment.

THE FUTURE FOR NCA IN UGANDA

There is a clear pathway for advancing environmental-economic accounting in Uganda established via the NP-AEEA. A key success from the NP-AEEA is that it has managed to achieve a consensus on priority NCA activities across multiple national stakeholders. Via the process of developing the NP-AEEA, UBoS, MWE / NEMA, NPA, NFA, UWA and many other MDAs have contributed to planning the statistical information system required for better management of environmental and natural resource management called for by numerous development and environmental planning policies. Furthermore, it provides the necessary platform for engagement with international agencies and initiatives pushing forward the agenda for NCA, not just in Uganda but also regionally and globally. This includes not only UN Statistics Division in terms of direct support to UBoS, but also via the Gaborone Declaration for Sustainability in Africa (GDSA), World Bank WAVES initiative, UN Environment and UN REDD programme.

The NP-AEEA clearly articulates the need to establish effective coordination and collaboration, both across stakeholders within Uganda but also between the multiple international agencies supporting the adoption and use of NCA regionally and globally. The NP-AEEA also proposes key activities where this project can contribute that are not in conflict with existing activities or proposals, specifically:

- Providing training and capacity building in ecosystem accounting
- Developing initial accounts and methodologies for ecosystem extent, condition and selected services
- Inventorying and quality assessing data for ecosystem accounting
- Contributing to the development of a spatial data accounting architecture
- Enhancing statistical coordination between advancement of ecosystem accounting with other priority SEEA accounts
- Improving data on the contribution of ENR to the Ugandan economy, poverty reduction and improved livelihoods
- Guiding investment in ecosystem assets and their services (including for conservation priorities)

- Enriching the SOERs by organising spatially disaggregated data and input to the district level environment reports



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