



Integrating Natural Capital into Sustainable Development Decision-making in Uganda

Project Needs Assessment Report *(Final Draft)*

June 2020



Acknowledgement

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The needs assessment report has been compiled through wide consultations with national and international stakeholders all of whom are thanked. Special appreciation is extended to the teams at the UN Environment World Conservation Monitoring Centre (UNEP-WCMC) and the Institute for the Development of Environmental-Economic Accounting (IDEEA) that offered invaluable technical guidance towards the understanding of the Natural Capital Accounting approach. The UNEP-WCMC team is also instrumental in the overall project administration and for this, they are dearly appreciated. The project management team further extends its utmost appreciation to the International Institute for Environment and Development (IIED) for the technical support during the compilation of the needs assessment report by providing critical insights into logical structuring of the report.

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Foreword

Uganda's natural capital, including biodiversity, contributes substantially to economic growth and well-being of its people and their environment. Natural capital accounting involves the use of consistent and comparable data to show how natural resources contribute to the economy and how the economy affects natural resources. By painting a broader picture of economic development than standard measures such as gross domestic product (GDP), Natural Capital Accounts become a fundamental tool for environmental management, biodiversity conservation and the tracking of corresponding Sustainable Development Goals.



The needs assessment report for the project on Integrating Natural Capital into Sustainable Development Decision-making in Uganda provides a comprehensive outlook on expectations of the different stakeholders. The project realises that stakeholders have differing interests and sometimes power and/or influence. To this end, the needs assessment seeks to garner insights from these stakeholders to forge mechanisms to harmonise and guide project implementation towards relevant, agreeable and usable outputs. The assessment and the report explicitly identify and present respectively the data gaps that could undermine the realisation of the National Plan for Advancing Environmental-Economic Accounting (NP-AEEA) in Uganda. In the report, an effort is made to indicate sources of data and/or information that could be used in the development of Natural Capital Accounts.

Compilation of this report was based on information mobilised from responses given during a needs assessment exercise in which Government of Uganda (GoU) Ministries, Departments and Agencies (MDAs), researchers and academics, environmental management and biodiversity conservation Non-Government Organisations (NGOs), Civil Society Organisations (CSOs), among others, participated. Information from the survey was enriched with insights from stakeholder workshops, focus group discussions as well an extensive review of grey literature that included reports on related projects such as the Political Economy Analysis developed on the CONNECT Project.

I hope that you find this report insightful.

Dr Tom O. Okurut
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Table of Contents

Acknowledgement	ii
Foreword.....	iii
List of Tables	v
List of Figures	v
List of Acronyms.....	vi
Executive Summary.....	vii
1 Introduction	1
1.1 Background to the NCA Project	Error! Bookmark not defined.
1.2 Objectives of the Needs Assessment.....	1
1.2.1 Overall Objective.....	3
1.2.2 Specific Objectives	3
2 Institutional arrangement and stakeholder involvement.....	4
2.1 Entry points for NCA in Uganda	4
2.2 Stakeholders Involved.....	4
2.3 Method of Engagement	9
2.4 Data organisation and analysis	9
2.5 Participation.....	9
2.6 Strengths and limitations of the assessment.....	9
3 Findings of the Needs Assessment	10
3.1 Overview of the assessment	10
3.2 Biodiversity and Tourism	11
3.2.1 Priority objective for developing NCAs	11
3.2.2 Stakeholders and their interests.....	12
3.2.3 Existing Data Sources	16
3.2.4 Data gaps.....	18
3.3 Fisheries and Resource Accounts.....	18
3.3.1 Priority Objective for developing NCAs	18
3.3.2 Stakeholders and their interests.....	19
3.3.3 Existing Data Sources	23
3.3.4 Data gaps.....	27
3.4 Land and Land Degradation Accounts	27
3.4.1 Priority Objective for developing NCAs	27
3.4.2 Stakeholders and their interests.....	28
3.4.3 Existing Data Sources	33
3.4.4 Data gaps.....	35
4 Conclusion.....	36
Appendix	37

List of Tables

Table 1: Opportunities for the entry of biodiversity-related NCA into Uganda’s decision-making processes.....	5
Table 2: Stakeholder demands and interests in biodiversity and tourism accounts	12
Table 3: Sources of data and/information for developing Biodiversity and Tourism accounts	16
Table 4: Stakeholder demands and interests in fisheries resource accounts	19
Table 5: Sources of data and/information for developing fisheries resource accounts.....	23
Table 6: Stakeholder demands and interests in land and land degradation accounts.....	28
Table 7: Sources of data and/information for developing land and land degradation accounts	33

List of Figures

Figure 1: Stakeholder priorities for developing the accounts	11
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List of Acronyms

ENR	Environment and Natural Resources
CCD	Climate Change Department
CPTH	Conservation Through Public Health
GoU	Government of Uganda
IUCN	International Union for Conservation of Nature
LVFO	Lake Victoria Fisheries Organisation
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDA	Ministries and Designated Authorities
MLHUD	Ministry of Lands, Housing and Urban Development
MoFPED	Ministry of Finance Planning and Economic Development
MoLG	Ministry of Local Government
MTWA	Ministry of Tourism, Wildlife and Antiquities
MUK	Makerere University Kampala
MWE	Ministry for Water and Environment
MWE	Ministry of Water and Environment
NAFIRRI	National Fisheries Resource Research Institute
NARO	National Agricultural Research Organisation
NBSAP	National Biodiversity Strategy and Action Plan
NCA	Natural Capital Accounts
NDP	National Development Plan
NEMA	National Environment Management Authority
NFA	National Forest Authority
NP-AEEA	National Plan for Advancing Environmental-Economic Accounting
NPA	National Planning Authority
OPM	Office of the Prime Minister
SDG	Sustainable Development Goals
SEEA	System for Environmental-Economic Accounting
UBoS	Uganda Bureau of Statistics
UGGDS	UGGDS - Uganda Green Growth Development Strategy
UNCST	Uganda National Council for Science and Technology
UNSD	United Nations Statistics Division
UWA	Uganda Wildlife Authority

Executive Summary

Natural capital can be defined as the “stocks of natural assets which include geology, soil, air, water and all living things”. These ‘living things’ – of which biodiversity is an essential characteristic - are critical components of any country’s natural capital stock, and nowhere more so than in Uganda. Here, with over 80% of its population living in rural areas, the well-being of the population is inherently dependent on the goods and services provided by biodiversity, yet a lack of understanding of the economic value results in planning and policy processes that fail to take biodiversity into account. Ensuing negative impacts disproportionately affect the rural poor, who primarily and directly depend upon ecosystem services for their livelihoods and well-being.

Uganda openly recognises these challenges, and the potential benefits of natural capital accounting (NCA) to help overcome them. The country’s National Biodiversity Strategy and Action Plan (NBSAP), National Development Plan (NDP III) and Uganda Green Growth Development Strategy (UGGDS) all acknowledge the need to improve management of natural capital to deliver economic development and poverty alleviation.

This needs assessment report captures the key thoughts of stakeholders in what ought to be captured by this project on Integrating Natural Capital into Sustainable Development Decision-making in Uganda. The findings will critically inform the accounts being developed on the project i.e. biodiversity and tourism accounts, fisheries resource accounts and the land and land degradation accounts. In this report, the stakeholders also offer insights on the gaps that remain following the development of preliminary natural capital accounts for land, forests and other selected key species in the country amongst other challenges. Further, pointers are made towards probable sources of data that could be harnessed in the development of the natural capital accounts to foster the National Plan for Advancing Environment Economic Accounting. This plan can be found [here](#).

The objective of the Needs Assessment is to identify the interests of stakeholders in the accounts being developed on the project and requirements for later uptake/institutionalisation. The assessment, therefore, engaged a wide range of stakeholders from government Ministries, Departments and Agencies (MDAs), environment and conservation Non-Government Organisations (NGOs), Civil Society Organisations (CSOs), private enterprises, research organisations, Institutions of Higher Learning, among others. The extensive consultative approach ensured that all stakeholders’ interests are captured, tapping into the multidisciplinary insights and creating leverage for knowledge legitimacy.

1 Introduction

1.1 Background to the NCA Project

Natural capital accounting involves the use of consistent and comparable data to show how natural resources contribute to the economy and how the economy affects natural resources. Natural capital accounts (NCAs) paint a broader picture of economic development than standard measures such as gross domestic product (GDP). It is part of environmental-economic accounting which has been around for more than 30 years.

In 2012, the United Nations approved the System of Environmental-Economic Accounting (SEEA) as a global standard consistent with the System of National Accounts (SNA), the internationally agreed standard set of recommendations on how to compile measures of economic activity.

The importance of NCA has been recognized by the Convention on Biological Diversity (CBD). The key decision by the Conference of Parties relevant for NCA includes decision X/2 on the adoption of the Strategic Plan for Biodiversity 2011-2020 and the associated Aichi targets. Strategic goal A of the Strategic Plan for addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. Aichi Target 2 states that by 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

In decision XIII/3 paragraph 18 (b) COP invites Parties and other Governments, in collaboration with relevant national and international organisations and initiatives to introduce or scale up the use of environmental-economic accounting and natural capital accounting, as well as diverse methods and methodologies to assess the multiple values of biodiversity. Besides, Uganda's National Biodiversity Strategy and Action Plan (NBSAP) (2015-2025), under Strategic Objective 4 on promoting sustainable use and equitable sharing of benefits and costs of biodiversity, activity 4.1.6 aims to integrate biodiversity accounting into national accounting and reporting processes.

The National Environment Management Authority (NEMA) in collaboration with the UN Environment World Conservation Monitoring Centre (UNEP-WCMC), National Planning Authority (NPA), Uganda Bureau of Statistics (UBoS), the International Institute for Environment and Development (IIED) and the Institute for the Development of

Environmental-Economic Accounting (IDEEA) is implementing a project titled '*Integrating Natural Capital into Sustainable Development Decision Making in Uganda.*'

The project is funded by the Darwin Initiative and has the overarching goal of supporting the delivery of the Ugandan National Development Plan, Green Growth Development Strategy and National Biodiversity Strategic Action Plan (NBSAP). This is through its four objectives namely to:

- a) integrate the value of biodiversity into national reporting, poverty reduction, and planning processes;
- b) organise biodiversity-related natural capital data (fisheries, land and land degradation and biodiversity and tourism) using internationally endorsed accounting frameworks;
- c) enable decision-makers to implement integrated environmental-economic planning for green growth, poverty alleviation and attaining the SDGs and Aichi Targets; and
- d) develop the capacity of account compilers and users to institutionalise the accounting approach.

The project will deliver across these objectives by partnering with stakeholders ranging from academia, civil society, private businesses, non-government organisations, Government Ministries, Departments and Agencies (MDAs) among other institutions. Through these partnerships, stakeholders will help identify planning decisions where it is important to consider values of biodiversity and ecosystem services and key areas where natural capital framing is likely to be influential. The project will provide technical support to national institutions on the compilation and supply of natural capital accounts to meet these demands. It will also develop demand and capacity amongst decision-makers to employ natural capital accounting processes in different decision contexts. The project is focusing on three biodiversity-related natural capital accounts (NCAs) namely:

- i. **biodiversity and tourism accounts**, to provide information on the major tourism sites, their species and the flows of economic benefits associated with the wildlife watching tourism they support
- ii. **fisheries resource accounts**, to provide information on policy-making for sustainable management of fish stocks and supporting the small-scale fisheries sector to provide livelihoods, fish for consumption and export products
- iii. **land (soils) and land (soils) degradation accounts**, to provide information for an understanding of the evolution of soil fertility to draw policies for better soil

management practices, driving sustainable agricultural practices and supporting poverty reduction.

1.2 Objectives of the Needs Assessment

1.2.1 Overall Objective

To understand and compile stakeholders' expectations of the NCAs being developed on the project

1.2.2 Specific Objectives

- i. To establish the stakeholders' priorities for developing the biodiversity-related NCAs
- ii. To identify sources of data/ information for developing the NCAs
- iii. To identify existing data gaps would impede the development of the NCAs

2 Institutional arrangement and stakeholder involvement

2.1 Entry points for NCA in Uganda

Uganda openly recognises the challenge of unprecedented loss of biodiversity-related capital and henceforth understands the potential benefit of natural capital accounting (NCA) in informing measures towards sustainable development. This understanding underpins several efforts for sustainable development which can be leveraged as entry points for the NCA approach.

Entry points are the windows of opportunity to influence decision-making that may occur at different governance. They also encompass situations and/or processes that may interest policymakers, relevant stakeholders and/or the general public in biodiversity-related Natural Capital Accounting or the NCA approach.

Several entry points for biodiversity-related NCA were identified at the project outset, as detailed in the initial context analysis for the [project](#). This review builds on this to identify the immediate opportunities for biodiversity focused NCA in Uganda, specifically identifying those that remain opportunities from the context analysis and the 'new' opportunities that may have arisen. These entry points that provide concrete opportunities for biodiversity-related NCA to influence decision-making. These are summarised in **Error! Reference source not found.1**.

2.2 Stakeholders Involved

Uganda has a panoply of policies, programmes and projects on development and environment. These are founded at sectoral, sub-national/local governments and national level and tackle aspects ranging from sustainable utilisation, conservation, equity and benefits sharing, etc. For this assessment, stakeholders from government Ministries, Departments and Agencies (MDAs) who are either principal policy/decision-makers or implementers, academics and researchers from universities and research agencies, members of the Civil Society Organisations (CSOs), Non-governmental Organisations (NGOs) and international development partners were engaged.

These different groups of stakeholders are ardent users and/or producers of biodiversity-related natural capital data and have a significant influence on the framing of national policy. The stakeholders were identified via the stakeholder mapping workshop at the project outset and via Political Economy Analysis (PEA) done under the CONNECT Project. The PEA supported linking biodiversity information more generally to key decision-makers in Uganda.

Table 1: Opportunities for the entry of biodiversity-related NCA into Uganda’s decision-making processes

Entry point: Policies, plans and initiatives		Concrete opportunities for 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
Uganda National Development Plan III (2020/2021–2024/2025)	Proposed interventions pertinent to the biodiversity integration include: Chapter 5, Objective 5(10) on promoting sustainable land and environmental management practices; Chapter 8, Objective 3 on developing and diversifying tourism products, and several interventions in chapter 9 like Objective 1(1) on improving the coordination, planning, regulation and monitoring of water resources; Objective 4(2) on promoting natural resource accounting to improve the national income management and Objective 6(2) on increasing awareness on sustainable use and management of the environment and natural resources	Providing indicators to track progress and inform decision making for achieving the goals NDP III
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

Entry point: Policies, plans and initiatives		Concrete opportunities for NCA
National Plan for Advancing Environmental-Economic Accounting	The plan seeks to align and coordinate Uganda's Environmental-Economic accounting initiatives and policy requirements with internationally endorsed frameworks by justifying and articulating the need for the establishment of an integrated statistical system to generate integrated data and information to monitor sustainable development indicators; streamline policy priorities and opportunities in Uganda for further improvement of the National Statistical System (NSS) with a focus on SEEA; use an Investment Logic Framework (ILF) to identify the driving factors and preconditions for engaging in activities, generate outputs, impacts and long-term outcomes from these activities; and pilot the use of selected accounts and draw lessons to enable deepening and scaling of SEEA at all levels of planning in Uganda	Providing opportunities to build capacity in using the NCA approach and advancing the approach throughout national planning processes
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
Environment and Natural Resources (ENR) Sub-Sector Gender Mainstreaming Strategy (2016-2021)	The strategy enhances 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
Tourism Development Master Plan	The plan spells out mechanisms to enhance the potential of the tourism sector to contribute to national socio-economic development and also highlights avenues for the conservation of tourism assets that are biodiversity-related	Providing information on biodiversity hotspots related to tourism, highlight the abundance of iconic species and also the trend in revenues accrued from biodiversity-related tourism

Entry point: Policies, plans and initiatives		Concrete opportunities for NCA
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 Act 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 in 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	The 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
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 the commitment to the Gaborone Declaration, and also show trends in natural capital.

Entry point: Policies, plans and initiatives		Concrete opportunities for NCA
African Community of Practice for Natural Capital Accounting	In November 2019, Representatives from 18 African countries met today for the first 'Africa Forum on Natural Capital Accounting' in Kampala, Uganda. Together, they committed to creating a new Community of Practice on Natural Capital Accounting (NCA) in Africa. See details .	The development of biodiversity-related NCA for Uganda will make concrete contributions to this community and present Uganda as a leader in the region
Uganda Budget 2020/2021	Biodiversity dependent sectors such as Tourism, Agriculture, Water and Environment feature in Uganda's Budget for the 2020/2021 Financial Year which prioritised environment/biodiversity dependent sectors	NCA can inform resource appropriation during the planning phase of the Budgeting process and facilitate in determining indicators for monitoring interventions

2.3 Method of Engagement

A needs assessment form was developed by the project consultants together assisted by the Project Management Unit (See Appendix ii). The form was pretested by sending it out to a few stakeholders to check its robustness. Once this was ascertained, a google form containing the same information was developed. In the meantime, a list of respondents was purposively made and respondents were contacted ahead of the assessment/interview to introduce and request for their participation in the activity. It was to these that the word document of the needs assessment and the google form equivalent were sent. Follow-up phone interviews were also conducted with randomly selected respondents. The interviews aimed to expound and contextualise the responses made.

2.4 Data organisation and analysis

Google forms provided a quick peek into the responses from the respondents that opted for the google forms. This was taken as a preliminary analysis. A detailed analysis involved transcription of responses from all the respondents and identification of key themes. Only the key findings are presented in this report.

2.5 Participation

The assessment form was sent out to 89 people and of those 39 responded. Information from these, therefore, formed the basis of this report.

2.6 Strengths and limitations of the assessment

The responses came from key persons in the different stakeholder groups and thus thought robust and a good basis for the analysis. It is, however, believed that the findings will be continuously updated as and when information becomes available.

The assessment builds on the [context analysis](#) done at the project outset and on-going project workshops and bilateral meetings. During these engagements, stakeholders continuously offer insights some of which are captured in the findings and/or analysis.

The main limitation to the assessment is a low response rate, i.e. less than 50%. This could be attributed to the use of internet-based forms in a time when many respondents may have had limited internet access due to the directive to stay and work from home.

3 Findings of the Needs Assessment

3.1 Overview of the assessment

The needs assessment form comprised three (3) parts each touching upon an aspect of the project. Part one (1), the needs assessment, sought to establish from respondents what their priorities were concerning the accounts being developed. The respondents were to offer a perspective aligned to their institution and/or expertise on what the priorities were for developing experimental ecosystem accounts for at least one of the accounts being developed. To this end, five options were offered from which the respondents were to choose. This was followed by a brief reason for the choice made. The options offered were as follows;

- (i) supporting delivery of the National Development Plan (NDP), Green Growth Development Strategy (UGGDS) and the National Biodiversity Strategy and Action Plan (NBSAP);
- (ii) integrating the value of biodiversity into national reporting, poverty reduction, and planning processes;
- (iii) organizing biodiversity-related natural capital data using internationally endorsed accounting frameworks;
- (iv) enabling decision-makers to implement integrated environmental-economic planning for green growth, poverty alleviation and attaining the SDGs and Aichi Targets; and
- (v) developing the capacity of account compilers and users to institutionalise the accounting approach.

Part two (2) of the assessment, data needs, sought to establish the sources of data for developing the accounts. The respondents were to offer insights on what type of data is available (quantitative vs qualitative), where that data is located (institutions, research networks, etc.) and how it can be accessed. This was for the extent, condition and the supply and use accounts for the natural capital accounts pertinent to the project i.e. biodiversity and tourism, fisheries resources and the land and land degradation accounts.

Part three (3) of the assessment, data gaps, explored what the respondents considered to be the gaps in the available data. The respondents were to help identify these data gaps, including other challenges that could impend the development of accounts among other project activities as well as possible solutions to these challenges.

3.2 Biodiversity and Tourism

3.2.1 Priority objective for developing NCAs

Most respondents (33%) thought the biodiversity and tourism accounts should primarily facilitate the integration of biodiversity aspects into planning processes. This was closely followed by 30% of the respondents who thought the accounts should enhance the use of an integrated environmental-economic planning approach in achieving national targets while 20%, 13%, and 4% of the respondents thought the accounts should support the delivery of national strategies, enhance capacity building for NCA institutionalisation and organising NCAs using internationally endorsed frameworks respectively. See Figure 1.

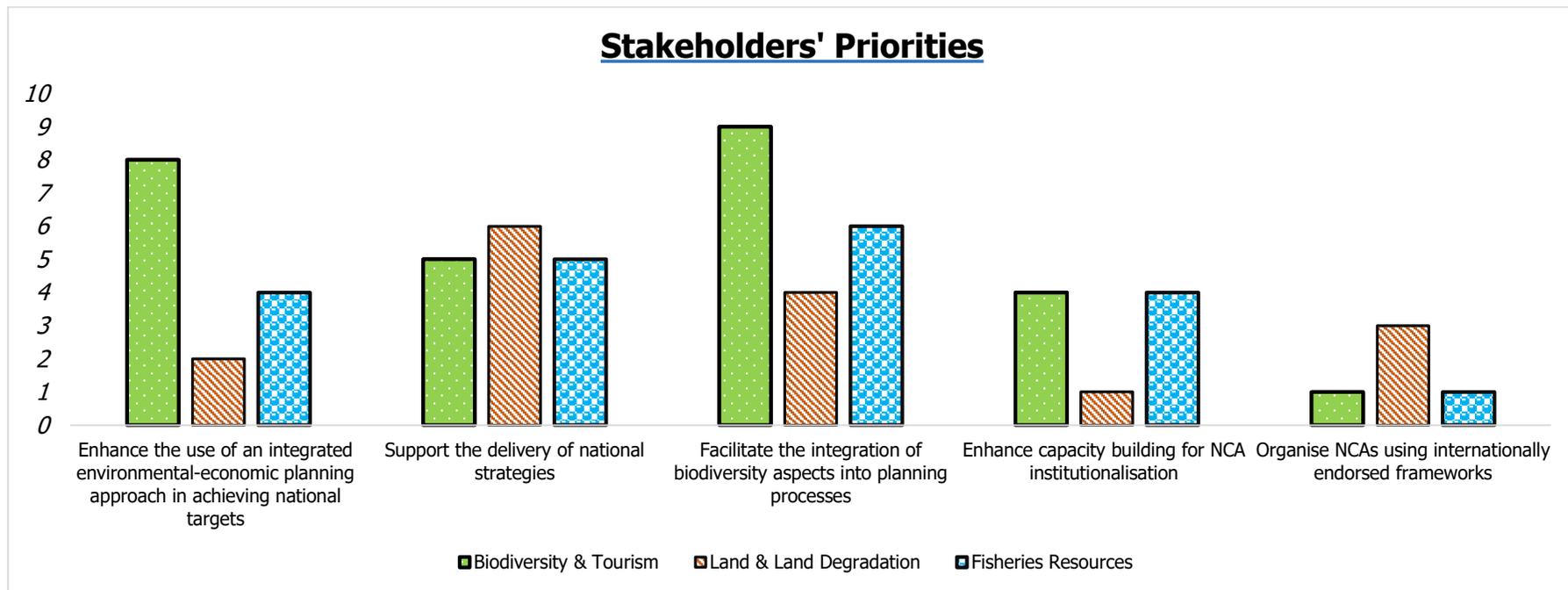


Figure 1: Stakeholder priorities for developing the accounts

3.2.2 Stakeholders and their interests

Table 2: Stakeholder demands and interests in biodiversity and tourism accounts

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
Ministry of Tourism, Wildlife and Antiquities (MTWA)	Highlighting the contribution of biodiversity-related tourism to the economy and livelihoods	<ul style="list-style-type: none"> ▲ Providing integrated information on the environment, biodiversity/wildlife and tourism to support sector planning ▲ Facilitate the design and amendment of existing tourism and biodiversity policies/laws to align with other international environmental laws and/or internationally endorsed environmental accounting frameworks
Uganda Wildlife Authority (UWA)	Demonstrating the value of biodiversity/wildlife in socio-economic development and identifying avenues to interest further non-government investment in improving stocks of wildlife and the integrity of protected areas	<ul style="list-style-type: none"> ▲ Providing a clear and simple means of assessing changes over time and prioritising management actions ▲ Providing a digital platform (online library) for tourism and biodiversity publications ▲ Providing a basis for accountability to the stakeholders how tourism and biodiversity resources are being conserved and sustainably and equitably utilised
Uganda Tourism Board (UTB)	Establish the potential of nature-based tourism to national development and societal wellbeing	<ul style="list-style-type: none"> ▲ Producing a meta-database of tourism and biodiversity resources in Uganda ▲ Offer insights and a basis for the shift to sustainable tourism (ecotourism) planning and development including engagement with the private sector
Ministry of Water and Environment (MWE)	Demonstrating the value of the environment to multiple sectors and stimulating investment in natural capital	<ul style="list-style-type: none"> ▲ Provide indicators for reporting on trends and distribution of fauna and flora ▲ Providing baselines to compare trends in biodiversity with economic and social activity in a spatially explicit manner
National Environment Management	Demonstrating the value of different ecosystems to sectoral development and stimulate sustainable investment and use natural capitals	<ul style="list-style-type: none"> ▲ Identifying national tourism hotspots and biodiversity-rich areas to guide developers during the ESIA process

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
Authority (NEMA)		<ul style="list-style-type: none"> ⤴ Providing indicators to track progress and inform decision making in support of the NBSAP and mainstreaming biodiversity into decision making ⤴ The accounts will be used for decision making, coordinating, supervising and monitoring environment and biodiversity management ⤴ Provide indicators for reporting on trends in environmental assets.
National Forestry Authority (NFA)	Demonstrating the value of forest ecosystems in national tourism and socio-economic development	<ul style="list-style-type: none"> ⤴ Identifying forest ecosystems with a high tourism potential ⤴ Support reporting on progress to sector targets such its contribution to ecotourism development in the country ⤴ Providing sources of data and information for the National Biodiversity Survey
Ministry of Finance, Planning and Economic Development (MoFPED)	To incorporate explicit biodiversity and tourism data and/information into national accounts and make decisions that are economically viable for the conservation of such resources	<ul style="list-style-type: none"> ⤴ Providing disaggregated information on the contribution of biodiversity-related tourism to national development overtime ⤴ Informing resource mobilisation in support of the NDP, UGGDS among other socio-economic development approaches ⤴ The accounts would support environmental responsive macroeconomic planning, monitoring, and reporting while providing data to close gaps that have undermined reporting on the environmental cost of our development approach over the years ⤴ Providing an information system for holistic and inclusive socio-economic development planning which also integrates the benefits accrued from the environment into decision-making processes as well as the impact of the loss of biodiversity stocks on the economy due to economic activity
Uganda Bureau of Statistics (UBoS)	Fulfilling its role to provide quality statistics to inform national development planning	<ul style="list-style-type: none"> ⤴ Provide a systematic way for accounting for the biodiversity and tourism resources in Uganda and thereby facilitate the delivery of the NPAEEA ⤴ Integrating the value of biodiversity into the Supply and Use Tables (SUT) ⤴ Create a basis for aligning the national biodiversity-related systems and/or accounts to the international frameworks ⤴ Provide resources necessary to build the capacity of staff to continuously monitor and assess institutional accounts

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
		<ul style="list-style-type: none"> ▲ Facilitate the development of links between biodiversity information with other SEEA accounts (condition, services supply)
National Planning Authority (NPA)	Achieving the NDP goals for a sustainable Environment and Natural Resource (ENR) Sector	<ul style="list-style-type: none"> ▲ Providing indicators to track progress and inform decision making for achieving the goals of the NDP III, UGGDS, the SDGs and delivering enhanced livelihoods and food security for Ugandans ▲ When the value of biodiversity is fully integrated into the national reporting, planning processes and poverty reduction, the research budget for the institution is likely to increase, hence increased information/data/ knowledge outputs from research to help government make informed decisions during their planning ▲ Signalling the stocks and changes in biodiversity-related tourism assets including whether such stocks are adequate to support the tourism sector in delivering its contribution to Uganda Vision 2040
Ministry of Local Government (MoLG)	Providing spatially disaggregated data for development and planning at lower levels of national development	<ul style="list-style-type: none"> ▲ 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 the 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., for national-level planning, payments for ecosystem services)	<ul style="list-style-type: none"> ▲ 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) ▲ Providing information on locally available nature-based tourism hotspots
Ministry of Health (MoH)	Providing information for formulating robust environmental and public health strategies	<ul style="list-style-type: none"> ▲ Providing integrated information on the stock of environmental assets and ecosystem services related to health that can help inform decision making concerning achieving the goals of the Environmental Health Policy especially for public health
UN System of Global Organisations (UN)	Establishing the statistical information system required to inform better decision making that leads to improved outcomes for the	<ul style="list-style-type: none"> ▲ Generating indicators to report on progress towards international commitments, including the SDGs, Aichi Targets, UNFCCC, etc.

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
Environment, UNDP, FAO)	environment (e.g., forests under UN-REDD), development and ending hunger	
United Nations Statistics Division (UNSD)	Fulfil their mandate to support Uganda and other countries' efforts to strengthen their national statistical systems	<ul style="list-style-type: none"> ▲ Allowing UNSD to draw on experiences and lessons learned in Uganda to improve global support
Natural Capital Forum	Provide support and access to available/used methodologies as well as community of practice	<ul style="list-style-type: none"> ▲ As a 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 on which communities depend
Environmental / Development NGOs (e.g., UNEP-WCMC, WCS, Nature Uganda, and Conservation International)	<ul style="list-style-type: none"> • Demonstrating the value of the environment to multiple sectors and stimulating more sustainable use and investment • Provide exemplars and/or lessons learned for stimulating the uptake of ecosystem accounting in other countries • Mainstreaming environment and related development data into decision making 	<ul style="list-style-type: none"> ▲ 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 ▲ Demonstrating returns on investment in environmental improvement programmes ▲ Establishing indicators for measuring biodiversity loss, improvement/increment hence help institutions to determine the progress of conservation efforts and also respond to crises
GDSA (MWE / Conservation International)	Provide exemplars/lessons learned for stimulating the uptake of ecosystem accounting in other countries (particularly GDSA members)	<ul style="list-style-type: none"> ▲ To achieve the commitment of integrating 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	<ul style="list-style-type: none"> ▲ Draw on lessons learned and experiences from the project to support other countries in implementing biodiversity accounts ▲ Providing data and/or information for the development of related NCAs in Uganda
Academia	Mainstreaming their environmental and related development data into decision making	<ul style="list-style-type: none"> ▲ As a public information system to support research and analysis

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
		<ul style="list-style-type: none"> ▲ Accounts to be developed are important for Academic training and Research, especially the process, and use/application.
Private sector	To establish possibilities for payments for ecosystem services	<ul style="list-style-type: none"> ▲ To identify investment opportunities in biodiversity-related tourism ▲ Create an understanding of the adverse effects of unsustainable tourism ventures

3.2.3 Existing Data Sources

Table 3: Sources of data and/information for developing Biodiversity and Tourism accounts

Type of accounts	Type of data available	Sources of the data	Accessibility
Ecosystem Extent Accounts	Land-use and Land cover Maps	NFA	Available on request
	Species population, status and range coverage	Biodiversity data bank, Makerere University	Available on request
	Landcover data, vegetation data	NFA	Available on request
	Location of Protected Areas (PAs) and Wildlife Reserves	UWA	Publications hosted on UWA website
	National Wildlife Status Reports	Uganda Wildlife Authority (Research and monitoring unity)	Available on request/ UWA website
	Student and Academic Research Outputs	Several local and international research institutions and universities such as MUK, ACODE, etc.	Available on request/websites/ subscription
	Migration Statistics	<ul style="list-style-type: none"> • Impact Assessment Reports (NEMA) • National Biomass Surveys (NFA) 	<ul style="list-style-type: none"> • Institutional publications (NEMA, UWA, UBOS, etc.) • Offices of National Parks
	Land-use and Land cover Maps	NFA	Available on request

Type of accounts	Type of data available	Sources of the data	Accessibility
Ecosystem Condition Accounts	Wildlife population Surveys/ Censuses	MTWA & UWA	Institutional Publications found on websites and/or available on request
	Red lists, Green lists, etc	IUCN	www.iucnredlists.org
	Climate data	Climate Change Department, Meteorology Department	Available on request and/or on the institutional website
	Impact of invasive and/or exotic species on natural ecosystems	NFA	Available on request
	The extent of biodiversity loss	Publications by environmental conservation agencies in Uganda	Requests to the different institutions
Ecosystem Supply and Use Accounts	Land-use and Land cover Maps	NFA	Available on request
	Species utilisation (e.g. sport hunting in Uganda), impact on livelihoods and local perceptions of the benefits and forms of resource utilisation Reports	UWA/ UTB	Available on request
	Expenditure data on tourism (inbound and outbound tourism)	MTWA & UWA	Institutional Publications found on websites and/or available on request
	Valuation studies and wildlife survey reports/ data	MTWA & UWA	Institutional Publications found on websites and/or available on request
	The extent of illegal/ unregulated use of biodiversity	UWA, UWEC	Available on request and/or on the institutional website
	Sector Performance Reports	UBOS	Available on request/ UBOS website
	Number, origin, destination, etc of Uganda's Tourists	UTB	Available on request and/or on the institutional website
	Development Reports including mid-term reviews of the NDPs	NPA	Available on reports/ NPA Website
	Bibliographic database	PCLG	www.povertyandconservation.info
	Socio-economic contribution of biodiversity to the tourism sector	UBOS, UIA, MoFPED, World Bank, FAO, MTWA, UWAS, UTB	Available on request and/or on the institutional website

3.2.4 Data gaps

The respondents also identified some data gaps that should be addressed in developing the biodiversity and tourism accounts for Uganda. These included;

- i. Data on the economic impact of climate change, variability and adaptation on the tourism sub-sector
- ii. Up-to-date data on national land-use and/or land cover
- iii. Baseline data the variables required in developing the different aspects of the accounts
- iv. Data on estimates of annual costs of environmental degradation and biodiversity loss
- v. Data on natural resource rents to understand the cost foregone
- vi. Data on biodiversity-related tourism outside Protected Areas (PAs)

3.3 Fisheries and Resource Accounts

3.3.1 Priority Objective for developing NCAs

For the Fisheries Resource Accounts, majority of the respondents (30%) pointed out that the priority for developing the accounts should be to enhance the use of an integrated environmental-economic planning approach in achieving national targets this was closely followed by 27% of the respondents who thought the accounts should support the delivery of national strategies. Equal proportions of respondents (20%) thought the accounts should facilitate the integration of biodiversity aspects into planning processes and enhance capacity building for NCA institutionalisation whereas 4% of the respondents believed the priority for developing the accounts should be to organise NCAs using internationally endorsed frameworks. See Figure 1.

3.3.2 Stakeholders and their interests

Table 4: Stakeholder demands and interests in fisheries resource accounts

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)	Identify points of entry for investment in the fisheries sub-sector to deliver sustainable food production systems for national development	<ul style="list-style-type: none"> ▲ Provide a framework for programming and developing projects that inform planning for the fisheries sub-sector by incorporating aspects on the economic and environmental costs and benefits of fishing ▲ Identify and map breeding areas based on key fish species for purpose of gazettelement, appropriate fish production (i.e. cage culture, aquaculture practices) and harvesting technologies (i.e. recommended gill net mesh sizes, recommended boat numbers per each aquatic ecosystem) ▲ Provide information on the rate of loss or gains (changes in species population and range coverage) of fisheries resources and their overall impact on the fishing sub-sector
National Fisheries Resource Research Institute (NAFIRRI)	Identify critical aspects of the fisheries sector on which in-depth research could be undertaken for national development	<ul style="list-style-type: none"> ▲ Identify data and/or information gaps that could be further explored to inform sector policy, planning and development ▲ Articulate existing research information on fish stocks per aquatic ecosystem, maximum sustainable yields, identified and mapped breeding areas based on key fish species for purpose of gazettelement, appropriate fish production
Ministry of Water and Environment (MWE)	Demonstrating the value of the environment to multiple sectors and stimulating investment in natural capital	<ul style="list-style-type: none"> ▲ Explore and articulate the impact of environmental predicaments such as climate change on the fisheries resources in Uganda ▲ Identify data and/or information gaps in institutional data collected on water quality management and other water resource monitoring activities ▲ Provide baseline information for studies to link environmental degradation to the fisheries resource sector ▲ Identify opportunities for interdisciplinary collaboration for the environment and socio-economic development

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
National Environment Management Authority (NEMA)	Demonstrating the value of different ecosystems to sectoral development and stimulate sustainable investment and use natural capitals	<ul style="list-style-type: none"> ▲ Articulate the impact of infrastructural development on the fisheries sector and henceforth inform issuance of permits to developers during the ESIA process ▲ 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 in the state of the environment reports ▲ Provide information used in mobilising resources for environment and biodiversity conservation and management
National Forestry Authority (NFA)	Demonstrating the value of forest ecosystems in water catchment protection	<ul style="list-style-type: none"> ▲ Support reporting on the progress of the forestry sector targets such its contribution to national development ▲ Providing sources of data and information for the National Biodiversity Survey ▲ Articulate the land-use and land cover changes attributed to fisheries sector development in the form of aquaculture
Ministry of Finance, Planning and Economic Development (MoFPED)	Incorporating explicit and disaggregated information/data on fisheries resources into national accounts and make decisions that are economically viable for the proper management of these resources	<ul style="list-style-type: none"> ▲ Provide a basis for mobilising investments and strengthening policy commitments to the development of the fisheries sector in Uganda ▲ Providing an information system for holistic and inclusive socio-economic development planning which also integrates the benefits accrued from fisheries resources into decision-making processes ▲ The accounts would support environmental responsive macroeconomic planning, monitoring, and reporting while providing data to close gaps that have undermined reporting on the environmental cost of our development approach over the years ▲ Providing an information system for holistic and inclusive socio-economic development planning which also integrates the benefits accrued from the environment into decision-making

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
		<p>processes as well as the impact of the loss of biodiversity stocks on the economy due to economic activity</p>
<p>Uganda Bureau of Statistics (UBoS)</p>	<p>Fulfilling its role to provide quality statistics to inform national development planning</p>	<ul style="list-style-type: none"> ▲ Provide a systematic way for accounting and integrating the value of the fisheries resources into the Supply and Use Tables (SUT) of Uganda ▲ Create a basis for aligning the national biodiversity-related systems/accounts to the international frameworks ▲ Provide resources necessary to build the capacity of staff to continuously monitor and assess institutional accounts ▲ Facilitate the development of links between biodiversity information with other SEEA accounts (condition, services supply)
<p>National Planning Authority (NPA)</p>	<p>Achieving the NDP goals for a sustainable Environment and Natural Resource (ENR) Sector</p>	<ul style="list-style-type: none"> ▲ Providing indicators to track progress and inform decision making for achieving the goals of the NDP III, UGGDS, the SDGs and delivering enhanced livelihoods, food security and national development ▲ Articulate the value of biodiversity-related into the national reporting, planning and poverty reduction interventions ▲ Create a basis for informed and holistic planning and decision-making cycles ▲ Signal the stocks and changes in fisheries resources overtime time and indicate whether they are adequate to achieve Vision 2040 targets for Uganda
<p>Ministry of Local Government (MoLG)</p>	<p>Providing spatially disaggregated data for development and planning at lower levels of national development</p>	<ul style="list-style-type: none"> ▲ 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 the local scale as part of the Decentralization Policy of Uganda

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
District / Urban Local Governments	Highlighting the value of fisheries resources within their districts (e.g., for national-level planning, payments for ecosystem services)	<ul style="list-style-type: none"> ▲ Providing an information set that can inform local land-use planning with better outcomes for fish production and livelihoods (dependent on sufficient spatial disaggregation being achieved)
United Nations Statistics Division (UNSD)	Fulfil their mandate to support Uganda and other countries' efforts to strengthen their national statistical systems	<ul style="list-style-type: none"> ▲ 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	<ul style="list-style-type: none"> ▲ Generating indicators to report on progress towards international commitments, including the SDGs, CBD, etc.
Natural Capital Forum	Provide support and access to available/used methodologies as well as community of practice	<ul style="list-style-type: none"> ▲ As a 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 on which communities depend
Environmental / Development NGOs (e.g., UNEP-WCMC, WCS, Nature Uganda, and Conservation International)	<ul style="list-style-type: none"> • Demonstrating the value of the environment to multiple sectors and stimulating more sustainable use and investment in this resource for conservation and development purposes • Provide exemplars and/or lessons learned for stimulating the uptake of ecosystem accounting in other countries • Mainstreaming environment and related development data into decision making 	<ul style="list-style-type: none"> ▲ As a public information system that can be used in more holistic land-use planning that provides improved outcomes for biodiversity and the ecosystems ▲ Demonstrating returns on investment in environmental improvement programmes ▲ Establishing indicators for measuring biodiversity loss, improvement/increment hence help institutions to determine the progress of conservation efforts, determine appropriate management regimes and also respond to crises
GDSA (MWE / Conservation International)	Provide exemplars/lessons learned for stimulating the uptake of ecosystem accounting in other countries (particularly GDSA members)	<ul style="list-style-type: none"> ▲ To achieve the commitment of integrating the value of natural capital into national accounting processes and decision making

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
World Bank (WAVES Programme)	Promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts	<ul style="list-style-type: none"> ▲ Draw on lessons learned and experiences from the project to support other countries in developing biodiversity accounts ▲ Providing data and/or information for the development of related NCAs in Uganda
Academia	Train students and practitioners on aspects of mainstreaming environment and biodiversity-related natural capital into national policy	<ul style="list-style-type: none"> ▲ As a public information system to support research and analysis ▲ Accounts to be developed are important for Academic training and Research, especially the process, and use/application. This is very relevant at the Graduate level (MSc & PhD) training
Private sector	To establish possibilities for payments for ecosystem services and sustainable investment	<ul style="list-style-type: none"> ▲ Articulate the adverse impacts of unsustainable fishing techniques ▲ Identify investment opportunities that promote the sustainability of the fisheries sector ▲ Identify fishing hotspots as well as appropriate and low-cost fishing techniques

3.3.3 Existing Data Sources

Table 5: Sources of data and/information for developing fisheries resource accounts

Type of accounts	Type of data available	Sources of the data	Accessibility
Ecosystem Extent Accounts	Size and Location of Waterbodies in Uganda	National Biomass Surveys from NFA	Available on request and/or on the institutional website
	Freshwater Biodiversity for Uganda (Reports, Raw data, etc.)	JRS Biodiversity and NAFIRRI	JRS Website: www.jrsbiodiversity.org/grants/nafirri-2018 Information also available on request from NAFIRRI
	Fish stock surveys	NAFIRRI	Available on request and/or on the institutional website
	Qualitative and quantitative data on Uganda's fisheries resources (Reports, Raw data, etc.)	Global Biodiversity Information Facility and NAFIRRI	GBIF website: https://www.gbif.org/Nafirri Uganda Information also available on request from NAFIRRI

Type of accounts	Type of data available	Sources of the data	Accessibility
	Land-use and Landcover Maps	NFA	Available on request
	Lake location, size, etc.	African Great Lakes Information Platform	https://www.africangreatlakesinform.org/
	Data on wetlands	Wetland Inspection Division (MWE)	Available on request and/or on the institutional website
	Quantitative, qualitative database and reports covering all the five major water bodies (Lakes Victoria, Albert, Edward, George, Kyoga), and some satellite lakes and rivers within the country.	NaFIRRI data centre and institute	Available on request and/or on the institutional website
	Data/reports/publications spanning over a decade on aspects such as Frame Survey and Hydro acoustics survey (for L. Victoria only)	NaFIRRI data centre and institute	Available on request and/or on the institutional website
	Technical reports; Institute annual reports; publications in international and regional journals; institute website; students' dissertations/thesis. Posters; brochures; flyers; policy guidelines	NaFIRRI data centre and institute	Available on request and/or on the institutional website
Ecosystem Condition Accounts	Data/reports/publications on fish breeding areas and emerging issues i.e. oil exploration and its impacts on the fisheries sector; pollution, algal, invertebrate and nutrient dynamics; invasive aquatic weed proliferation and its impacts on fish production systems	NaFIRRI data centre and institute	Available on request and/or on website
	Student and Academic Research Outputs	Several local and international research institutions and universities such as MUK, IFPRI, etc.	Available on request/websites/ subscription

Type of accounts	Type of data available	Sources of the data	Accessibility
	Climate data	Climate Change Department, Meteorology Department	Available on request and/or on the institutional website
	Data and/or information on water quality and quantities	Directorate of Water Development, NWSC, etc.	Available on request and/or on the institutional website
	Sewerage discharge	Department of Occupation Health & NWSC	Available on request and/or on the institutional website
	Lake and River pollution	Directorate of Water Development and Fisheries Department	Available on request and/or on the institutional website
	Residues in aquatic life	NAFIRRI, Local governments, National Bureau of Standards (NBS), Fisheries Department	Available on request and/or on the institutional website
Ecosystem Supply and Use Accounts	Student and Academic Research Outputs	Several local and international research institutions and universities such as MUK, IFPRI, etc.	Available on request/websites/ subscription
	Data/reports/publications spanning over a decade on aspects such as fish breeding areas; Mukene light fishing technology; fisheries Social economics; fish cage culture and pond fish farming;	NaFIRRI data centre and institute	Available on request and/or on website
	Data is available for Lake Victoria and it includes production, fish value and fish biomass by species	Lake Victoria Fisheries Organisation	Available on request and/or on website
	Socio-economic contribution of the Fisheries sector	UBOS, UIA, MoFPED, World Bank, FAO, MAAIF	Available on request and/or on the institutional website
	Species, number and size of fish caught	MAAIF	Available on request and/or on the institutional website

Type of accounts	Type of data available	Sources of the data	Accessibility
	Insights from the Private sector in the Fisheries sector	<ul style="list-style-type: none"> Uganda Fish Processors and Exporters Association Association of Fishers and Lake Users 	Available on request
	Fisheries sector country profile	FAO	http://www.fao.org/fishery/facp/UGA/en
	Data on fish productivity (species biomass; stock variation, fish catch composition and harvest across the five major aquatic ecosystems; economic returns from the key fishery each of the 5-aquatic ecosystem; Data on the number of fishing boats and the number of fishers employed, etc.	NaFIRRI data centre and institute	Available on request and/or on the institutional website
	Information on the economic potential of specific lakes	<ul style="list-style-type: none"> ▲ Lake George Basin Integrated Management Organisation ▲ Lake Kyoga Integrated Management Organisation ▲ Lake Victoria Fisheries Organisation & LVEMP 	Available on request and/or on the institutional website
	Qualitative and Quantitative data on fisheries resources in Uganda	International Food Policy Research Institute (IFPRI - Uganda)	Website https://www.asti.cgiar.org/uganda/directory/national-fisheries-resources

3.3.4 Data gaps

The respondents also identified some data gaps that should be addressed in developing the fisheries resource accounts for Uganda. These included;

- i. Data on the fisheries/water quality and socioeconomics for most satellite lakes and rivers many of which are potential fish production areas
- ii. Data/information on the impact of catchment degradation on fish breeding grounds, and productivity, aquatic health, fish diseases and economic loss caused by degradation (i.e. industrial and sewage discharges, human settlement, sand mining, farming, etc.)
- iii. Data on the economic impact of climate change, variability and adaptation on the fishing communities on all the major aquatic ecosystems. However, some data is available for Lake Wamala and Kawi
- iv. Information on the impact of new lake management regimes like deployment of the army to curb illegal fishing is not readily available
- v. Information on aquaculture in Uganda despite the increased involvement of the private sector in this form of fish management

3.4 Land and Land Degradation Accounts

3.4.1 Priority Objective for developing NCAs

For the development of the land and land degradation accounts, the greatest proportion of respondents (40%) selected supporting the delivery of national strategies as the key priority for the accounts being developed. This was followed by 27%, 15%, 10% and 8% of the respondents that chose facilitating the integration of biodiversity aspects into planning processes, organising NCAs into endorsed frameworks, implementation of national targets, and capacity building for NCA institutionalisation respectively. The findings are summarised and presented in Figure 1 below;

3.4.2 Stakeholders and their interests

Table 6: Stakeholder demands and interests in land and land degradation accounts

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)	Identify opportunities for investments in soil/land and the agricultural systems they support to improve resilience and deliver sustainable food production systems	<ul style="list-style-type: none"> ⤴ Provide information on the evolution of soil aspects like fertility overtime to allow timely intervention ⤴ Provide data/ information for programmes geared towards addressing land degradation to achieve the United Nations Convention to Combat desertification (UNCCD)'s target of zero net land degradation by 2030 ⤴ Providing information and data to inform the formulation, review and implementation of policies, regulations, standards, plans, strategies and designs on soil and water conservation for agricultural production ⤴ Provide environment and socio-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 ⤴ Build capacity of staff MAAIF and other stakeholders in farming systems, farmland planning, soil and water conservation ⤴ Facilitate national soil mapping/zoning. This will help in determining locations of the different soil types, levels of soil fertility, species-site matching among other land-use practices
National Agricultural Research Organisation (NARO)	Identify aspects of land/soil management for in-depth research to steer agricultural production for national development	<ul style="list-style-type: none"> ⤴ Identify data and/or information gaps to be explored to inform sector policy, planning and extension services ⤴ Articulate existing research information on land/soil aspects like LDN, trends in LULC, etc. and their impact on crop yield and national development

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
Ministry of Water and Environment (MWE)	Demonstrating the value of the environment to multiple sectors and stimulating investment in natural capital	<ul style="list-style-type: none"> ▲ Provide data on the impact of climate change/ variability on soil productivity and land-use practices ▲ Provide information on soil-water deficiency in the different AEZ and the likely impact of groundwater draught systems like irrigation ▲ Provide baseline information for studies to link environmental degradation to agricultural land-use practices ▲ Identify opportunities for interdisciplinary collaboration for the environment and socio-economic development
National Environment Management Authority (NEMA)	Demonstrating the value of different ecosystems to sectoral development and stimulate sustainable investment and use natural capitals	<ul style="list-style-type: none"> ▲ Identifying potential areas for maximising agricultural production in the country and thereby a basis for permits to developers during the ESIA process ▲ Provide indicators for reporting on trends in environmental assets in the state of the environment reports ▲ Provide information for mobilising resources for environment and biodiversity conservation and management
National Forestry Authority (NFA)	Demonstrating the value of forest ecosystems in soil/land management	<ul style="list-style-type: none"> ▲ Identifying areas under agroforestry as a dominant land-use ▲ Support the reporting on the progress of the forestry sector targets such as its contribution to national development ▲ Providing sources of data and information for the National Biodiversity Survey ▲ Facilitate the production of maps that will guide on the number of resources needed to boost fertility and other land use planning processes
Ministry of Finance, Planning and Economic Development (MoFPED)	Incorporating explicit and disaggregated information/data of land/soil aspects into national accounts and make decisions that are economically viable for proper management of these resources	<ul style="list-style-type: none"> ▲ Provide a basis for mobilising investments and strengthening the policy commitment for addressing land degradation supported evaluation costs and benefits of action vis-à-vis inaction ▲ Providing an information system for holistic and inclusive socio-economic development planning which also integrates the benefits accrued from appropriate land/soil management into decision-making processes

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
		<ul style="list-style-type: none"> ▲ The accounts would support environmental responsive macroeconomic planning, monitoring, and reporting while providing data to close gaps that have undermined reporting on the environmental cost of our development approach over the years ▲ Providing an information system for holistic and inclusive socio-economic development planning which also integrates the benefits accrued from the environment into decision-making processes as well as the impact of the loss of biodiversity stocks on the economy due to economic activity
Uganda Bureau of Statistics (UBoS)	Fulfilling its role to provide quality statistics to inform national development planning	<ul style="list-style-type: none"> ▲ Provide a systematic way for accounting and integrating the value of the land /soil aspects into the Supply and Use Tables (SUT) of Uganda ▲ Create a basis for aligning the national biodiversity-related systems/accounts to the international frameworks ▲ Provide resources necessary to build the capacity of staff to continuously monitor and assess institutional accounts ▲ Facilitate the development of links between biodiversity information with other SEEA accounts (condition, services supply)
National Planning Authority (NPA)	Achieving the NDP goals for a sustainable Environment and Natural Resource (ENR) Sector	<ul style="list-style-type: none"> ▲ Providing indicators to track progress and inform decision making for achieving the goals of the NDP III, UGGDS, the SDGs and delivering enhanced livelihoods, food security and national development ▲ Articulate the value of biodiversity-related into the national reporting, planning and poverty reduction interventions ▲ Create a basis for informed and holistic planning and decision-making cycles ▲ Signal the stocks and changes in land/soil resources overtime time and indicate whether they are adequate to achieve Vision 2040 targets for Uganda

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
Ministry of Local Government (MoLG)	Providing spatially disaggregated data for development and planning at lower levels of national development	<ul style="list-style-type: none"> ⤴ 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 the local scale as part of the Decentralization Policy of Uganda
District / Urban Local Governments	Highlighting the value of proper land/soil management practices within their districts (e.g., for national-level planning, payments for ecosystem services)	<ul style="list-style-type: none"> ⤴ Providing an information set that can inform local land-use planning with better outcomes for agricultural production and livelihoods (dependent on sufficient spatial disaggregation being achieved)
United Nations Statistics Division (UNSD)	Fulfil their mandate to support Uganda and other countries' efforts to strengthen their national statistical systems	<ul style="list-style-type: none"> ⤴ 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	<ul style="list-style-type: none"> ⤴ Generating indicators to report on progress towards international commitments, including the SDGs, CBD, etc.
Natural Capital Forum	Provide support and access to available/used methodologies as well as community of practice	<ul style="list-style-type: none"> ⤴ As a 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 on which communities depend
Environmental / Development NGOs (e.g., UNEP-WCMC, WCS, Nature Uganda, and Conservation International)	<ul style="list-style-type: none"> • Demonstrating the value of the environment to multiple sectors and stimulating more sustainable use and investment in this resource for conservation and development purposes • Provide exemplars and/or lessons learned for stimulating the uptake of ecosystem accounting in other countries • Mainstreaming environment and related development data into decision making 	<ul style="list-style-type: none"> ⤴ As a public information system that can be used in more holistic land-use planning that provides improved outcomes for biodiversity and the ecosystems ⤴ Demonstrating returns on investment in environmental improvement programmes ⤴ Establishing indicators for measuring biodiversity loss, improvement/increment hence help institutions to determine the progress of conservation efforts, determine appropriate management regimes and also respond to crises

Stakeholder	Demands for biodiversity-related NCA	How biodiversity-related NCA can contribute
GDSA (MWE / Conservation International)	Provide exemplars/lessons learned for stimulating the uptake of ecosystem accounting in other countries (particularly GDSA members)	<ul style="list-style-type: none"> ▲ To achieve the commitment of integrating 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	<ul style="list-style-type: none"> ▲ Draw on lessons learned and experiences from the project to support other countries in developing biodiversity accounts ▲ Providing data and/or information for the development of related NCAs in Uganda
Academia	Train students and practitioners on aspects of mainstreaming environment and biodiversity-related natural capital into national policy	<ul style="list-style-type: none"> ▲ As a public information system to support research and analysis ▲ Accounts to be developed are important for Academic training and Research, especially the process, and use/application. This is very relevant at the Graduate level (MSc & PhD) training
Private sector	To establish possibilities for payments for ecosystem services and sustainable investment	<ul style="list-style-type: none"> ▲ Articulate the adverse impacts of unsustainable soil/land management practices ▲ Identify investment opportunities that promote sustainable agricultural production ▲ To stimulate private sector interest in the sustainable management of biodiversity-related natural capital

3.4.3 Existing Data Sources

Table 7: Sources of data and/information for developing land and land degradation accounts

Type of accounts	Type of data available	Sources of the data	Accessibility
Ecosystem Extent Accounts	Land cover data for Uganda	UBoS Statistical Abstract	Institutional website, annual publications, UBoS library
	Land Physical Accounts for Uganda (2019)	UBOS	Institutional website and library
	Agricultural data, information and statistics	UBOS	Available on request and more reports are on the website: https://www.ubos.org/data-portals-2/
	GIS Maps developed to inform NDP III	NPA	Available on request
	Agriculture Sector Performance Reports & Development Reports including mid-term reviews of the NDPs	NPA	Available on request/ NPA website
	Reports on Sustainable land Management Project	IFPRI, World Bank, etc.	IFPRI Publications: Policies for improved land management in Uganda
	LU&LUC data, Vegetation Cover	NFA	Available on request
	Global landcover GIS data & maps	FAO	http://www.fao.org/land-water
	Student and Academic Research Outputs	Several local and international research institutions and universities such as MUK, IFPRI, Wageningen University etc.	Available on request/websites/ subscription
	Land-use data, Topographic maps	Department of Physical Planning & Lands and Surveys Department	Available on request and/or on respective ministerial websites
	Land-use and Land-use Maps	NFA	Available on request

Type of accounts	Type of data available	Sources of the data	Accessibility
Ecosystem Condition Accounts	Land-use and land cover data (synthesis report)	UBoS Statistical Abstract	Institutional website, annual publication, UBoS library
	Land-use and land cover data (synthesis report)	UBoS' Agricultural Census Report	Institutional website, annual publication, UBoS library
	National Biomass Survey	NFA	Available on request and/or on Institutional website
	Bibliographic database	Poverty and Conservation Learning Group	Available institutional website
	Climate data	Meteorology Department	Available on request and/or institutional website
	Soil Data	Kawanda Agricultural Research Institute	Available on request
	Data on Physical, Chemical & Biological degradation of land	NARO	Available on request and/or institutional website
	Data on biomass productivity & leaching levels	NARO	Available on request and/or institutional website
	Data on land pollution	MAAIF, LGB, Government Chemist, Public Health	Available on request and/or institutional website
	Student and Academic Research Outputs	Several local and international research institutions and universities such as MUK, IFPRI, Wageningen University etc.	Available on request/websites/subscription
Ecosystem Supply and Use Accounts	National flora and fauna data	National Supply and Use Tables (UBoS)	UBoS SUT data
	Flora and fauna data for Uganda	National Biodiversity Data Bank	Available on request and/or institutional website
	Land-use and Land-use Maps	NFA	Available on request and/or on Institutional website
	Bibliographic database	PCLG	www.povertyandconservation.info

Type of accounts	Type of data available	Sources of the data	Accessibility
	Student and Academic Research Outputs	Several local and international research institutions and universities such as MUK, IFPRI, Wageningen University etc.	Available on request/websites/ subscription
	Socio-economic data/information on the impacts of land degradation	UBOS, UJA, MoFPED, World Bank, FAO, MAAIF	Available on request/ NPA website
	Crop data	Agricultural Planning Department, MAAIF	Available on request/ NPA website
	Community Perceptions and agricultural interventions	International Fund for Agriculture Development (IFAD)	https://www.ifad.org/en/web/operations/country/id/uganda
	Farm yields	Community Farmer Groups, MAAIF (Department of Extension Services), OWC/ NAADs secretariat	Available on request

3.4.4 Data gaps

The respondents also identified some data gaps that should be addressed in developing the land and land degradation accounts for Uganda. These included;

- i. Baseline data for the different variables may not be readily available
- ii. Up-to-date data on soils, topography and meteorology
- iii. Homogeneous data on Agro-Ecological Zones (AEZs)
- iv. Up-to-date data on soil aspects like fertility, water retention, overall production
- v. Up-to-date data on current land-uses and land cover for Uganda

4 Conclusion

The needs assessment sought to identify what the different stakeholders thought pertinent in the final stages of the development of the accounts and the overall implementation of the project on Integrating Natural Capital into Sustainable Development Decision-making in Uganda. The findings indicate that whereas UBOS was keen on having the accounts facilitating the organising natural capital data using internationally endorsed frameworks and developing the capacity of account compilers and users to institutionalise the NCA approach, NPA and NEMA were interested in the accounts supporting delivery of the National Development Plan (NDP), Green Growth Development Strategy (UGGDS) and the National Biodiversity Strategy and Action Plan (NBSAP) respectively, several MDAs were interested in the accounts enabling decision-makers to implement integrated environmental-economic planning for overall sector growth and national development while international development partners, NGOs and CSOs thought the key priority for the accounts should be to facilitate the integration of the value of biodiversity into national reporting, poverty reduction, and planning processes.

Whilst generally consistent with the context analysis report, the needs assessment has identified additional entry-points for the NCA approach and provides a contemporary framing to ensure priority user needs are met. The respondents also pointed out other unique aspects that the accounts should foster. They included creating leverage for environmental conservation, form a basis for academic training and research for future planners and policy-makers, inform initiatives for agricultural (crop and/or fisheries) yield maximisation, form a basis for a paradigm shift to ecotourism, among others.

Further, the respondents highlighted useful sources of data/information as well as existing data gaps that could inform the accounts. The data sources covered aspects on ecosystem extent, condition, supply and use of the biodiversity and tourism, fisheries resources and land and degradation.

In a nutshell, therefore, we believe the information will be pivotal in guiding the consultants and the project management team in developing accounts that are articulate, holistic, acceptable to stakeholders yet also engaging and interesting to other potential users. To this end, UBOS and the consultants are developing a consistent structure for a metadatabase that can be applied across each of the three accounting themes. This will guide data collection towards data of the necessary quality, spatial scale and to whose future production is best assured. From this the institutional data-sharing arrangement can be established to ensure future, time-efficient biodiversity-related natural capital accounts production.

Appendix

i

List of stakeholders involved

Ms Margaret Nakiryia (UBOS)	Mr Francis Ogwal (NEMA)	Mr Ronald Kaggwa (NPA)
Dr Moses Isabirye (Busitema Uni)	Assoc. Prof. Gerald Eilu (MUK)	Mr Elias Muhumuza (NAFIRRI)
Mr John Disi (NFA)	Dr Namaalwa Justine (MUK)	Mr Godwin Kamugisha (NEMA)
Ms Judith Angweth (MLHUD)	Mr Leone Candia (MTWA)	Ms Lorika Caro Brenda (OPM)
Ms Evelyn Atuhaire (MWE)	Mr Mohammad Semambo (CCD, MWE)	Mr Laban Musinguzi (NAFIRRI)
Mr Denis Mugagga (MOFPED)	Dr Sam Gwali (NARO)	Mr Obubu J. Peter (DWRM/MWE)
Dr Grace Nangendo (WCS)	Dr Mary Namaganda (MUK)	Mr Christopher Tumuhirwe (UBOS)
Mr Julius Muyizzi (NEMA)	Mr Tony Achidria (NEMA)	Mr Innocent Akampurira (UNCST)
Ms Caroline Aguti (MEMD)	Mr Emmanuel Menyha (UBOS)	Mr Kumakech Walter Aceronga (Cabinet Secretariat)
Mr Fred Onyai (NEMA)	Mr Fredrick Wanyama (UWA)	Ms Sarah Naigaga (NEMA)
Mr Joel Atim (MoLG)	Dr Dianah Nalwanga (Nature Uganda)	Mr Richard Kyambadde (MWE)
Mr Andrew Byamugisha (MAAIF)	Mr Richard Bagyenya (CTPH)	Ms Jovan Lubega (MAAIF)
Mr Nathan Mununuzi	Mr James Omoding (IUCN)	Mr George Wamungu
Mr Kamulegeya Patrick (MAAIF)	Ms Monique Akullo (NEMA)	Dr Papius Dias Tibihika (NEMA)
Ms Naomi Karekaho (NEMA)	Ms Evelyne Busingye (IUCN)	Mr Aaron Werikhe (NPA)
Ms Margaret Aanyu (NEMA)	Mr Richard Kapere (UWA)	Mr Aventino Bakunda (NAFIRRI)
Dr Rhoda Tumwebaze (LVFO)	Dr Victoria Tibenda (NAFIRRI)	Dr Winnie Nkalubo (NAFIRRI)

Needs Assessment Form

NEEDS ASSESSMENT FOR DEVELOPING ENVIRONMENTAL ECONOMIC ACCOUNTS FOR LAND AND LAND DEGRADATION, TOURISM AND BIODIVERSITY, AND FISHERIES RESOURCES FOR UGANDA

INTRODUCTION

The Government of Uganda through the National Environment Management Authority (NEMA), the Uganda Bureau of Statistics (UBOS) and the National Planning Authority (NPA) with support from the Darwin Initiative of the United Kingdom (UK) Government are developing experimental ecosystem accounts for Land (soil) and Land Degradation, Tourism and Biodiversity, and Fisheries. The ecosystem accounts are being developed under the project titled "Integrating Natural Capital into Sustainable Development Decision Making in Uganda"

The project aims at (i) delivering the Ugandan National Development Plan, Green Growth Development Strategy and the National Biodiversity Strategy and Action Plan (NBSAP); (ii) integrating the value of biodiversity into national reporting, poverty reduction, and planning processes; (iii) organizing biodiversity-related natural capital data using internationally endorsed accounting frameworks; (iv) Enabling decision-makers to implement integrated environmental-economic planning for green growth, poverty alleviation and attaining the SDGs and Aichi Targets; and (v) developing capacity of account compilers and users to institutionalize the accounting approach.

The ecosystem accounts are being developed using the United Nations System of Environmental-Economic Accounting (UN SEEA), and with technical support from the UN Environment World Conservation Monitoring Centre (UNEP WCMC), International Institute for Environment and Development (IIED) and the Institute for Development of Environmental-Economic Accounting (IDEEA) Group.

1. USER NEEDS ASSESSMENT

From the perspective of your institution, what are the priorities for the development of experimental ecosystem accounts for your institution?

1.1 Land (soil) and Land Degradation

- (vi) supporting delivery of the National Development Plan (NDP), Green Growth Development Strategy (UGGDS) and the National Biodiversity Strategy and Action Plan (NBSAP);
- (vii) integrating the value of biodiversity into national reporting, poverty reduction, and planning processes;
- (viii) organizing biodiversity-related natural capital data using internationally endorsed accounting frameworks;
- (ix) enabling decision-makers to implement integrated environmental-economic planning for green growth, poverty alleviation and attaining the SDGs and Aichi Targets; and
- (x) developing the capacity of account compilers and users to institutionalize the accounting approach.

Please describe how the accounts would serve your institution based on the choice made above?

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1.2 Biodiversity and Tourism Accounts

- (i) supporting delivery of the National Development Plan (NDP), Green Growth Development Strategy (UGGDS) and the National Biodiversity Strategy and Action Plan (NBSAP);
- (ii) integrating the value of biodiversity into national reporting, poverty reduction, and planning processes;
- (iii) organizing biodiversity-related natural capital data using internationally endorsed accounting frameworks;
- (iv) enabling decision-makers to implement integrated environmental-economic planning for green growth, poverty alleviation and attaining the SDGs and Aichi Targets; and
- (v) developing the capacity of account compilers and users to institutionalize the accounting approach.

Please describe how the accounts would serve your institution based on the choice made above?

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1.3 Fisheries Accounts

- (i) supporting delivery of the National Development Plan (NDP), Green Growth Development Strategy (UGGDS) and the National Biodiversity Strategy and Action Plan (NBSAP);
- (ii) integrating the value of biodiversity into national reporting, poverty reduction, and planning processes;
- (iii) organizing biodiversity-related natural capital data using internationally endorsed accounting frameworks;
- (iv) enabling decision-makers to implement integrated environmental-economic planning for green growth, poverty alleviation and attaining the SDGs and Aichi Targets; and
- (v) developing the capacity of account compilers and users to institutionalize the accounting approach.

Please describe how the accounts would serve your institution based on the choice made above?

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2. DATA NEEDS ASSESSMENT

Three types of accounts will be developed:

- a) The first account is the ecosystem extent account, which covers the physical and/or spatial extent of the ecosystem assessed whether it is land, fisheries or biodiversity.
- b) The second account is the ecosystem condition account, which describes changes in the quality and quantitative attributes of the ecosystem, include a decline in ecosystem services. For the land (soil) accounts the ecosystem condition may include stock and flow values for soil fertility and soil loss. For biodiversity (tourism accounts), the condition accounts may include the changes in wildlife populations and changes in forage cover. Condition accounts for fisheries accounts may include changes in stocks of fisheries by species and lake, the flows of fisheries production under capture fisheries and aquaculture, among others.
- c) The third type accounts are the ecosystem supply and use accounts, which describe the ecosystem service that directly provides a livelihood or is linked to livelihoods/ economic benefits such as nutrients used in the production of food and fibre, tourism packages or attractions associated with specific species and habitats within the protected areas, and the fisheries flows that end up as domestic consumption and industrial fisheries supply.

2.1 Based on the description above, please indicate the data available that could be used for the development of the account

	Type of accounts	Type of data available (quantitative, qualitative, in a database, or a report)	Sources of the data (institutional publications, data networks, other sources)	Accessibility (currently accessible, other)
Land (soil) and Land (soil) Degradation accounts	Ecosystem extent Accounts as described above			
	Ecosystem Condition Accounts as described above			
	Ecosystem Supply and Use Accounts as described above			

Biodiversity and tourism accounts	Ecosystem extent Accounts as described above			
	Ecosystem Condition Accounts as described above			
	Ecosystem Supply and Use Accounts as described above			
Fisheries Accounts	Ecosystem extent Accounts as described above			
	Ecosystem Condition Accounts as described above			
	Ecosystem Supply and Use Accounts as described above			

2.2 Please indicate the data gaps that exist and current options for filling in the gaps

	Type of accounts	Type of data available (quantitative, qualitative, in a database, or a report)	Sources of the data (institutional publications, data networks, other sources)
Land (soil) and Land (soil) Degradation accounts	Ecosystem extent Accounts as described above		
	Ecosystem Condition Accounts as described above		
	Ecosystem Supply and Use Accounts as described above		
Biodiversity and tourism accounts	Ecosystem extent Accounts as described above		
	Ecosystem Condition Accounts as described above		
	Ecosystem Supply and Use Accounts as described above		
Fisheries Accounts	Ecosystem extent Accounts as described above		
	Ecosystem Condition Accounts as described above		
	Ecosystem Supply and Use Accounts as described above		

Thank you for your support, we shall continue to engage you to support completion of the accounts