THE REPUBLIC OF UGANDA

Using Natural Capital Accounts for Green Growth in Uganda

DARWIN INITIATIVE

NEMA National Environment Management Authority ENSURING SUSTAINABLE DEVELOPMENT

NATIONAL PLANNING AUTHORITY PLANNING FOR DEVELOPMENT

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Acronyms

COVID-19	Corona Virus Disease - 19
FBAs	Fish Breeding Areas
GDP	Gross Domestic Product
GDSA	Gaborone Declaration for Sustainability in Africa
IDEEA Group	Institute for Development of Environmental-Economic Accounting
IIED	International Institute for Environment and Development
LDN	Land Degradation Neutrality
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MTWA	Ministry of Tourism, Wildlife and Antiquities
NBSAPII	National Biodiversity Strategy Action Plan 2
NCA	Natural Capital Accounts
NDC	Nationally Determined Contributions
NDPIII	National Development Plan 3
NEMA	National Environment Management Authority
NP- AEEA	National Plan for Advancing Environmental Economic Accounting
NRM	Natural Resource Management
SAM	Social Accounting Matrix
SDGs	Sustainable Development Goals
SEEA	System of Environmental-Economic Accounting
SEEA-EA	System of Environmental-Economic Accounting Ecosystem Accounting
SEEA-FC	System of Environmental-Economic Accounting Central Framework
SLM	Sustainable Land Management
SOERs	State of Environment Reports
UBoS	Uganda Bureau of Statistics
UGGDS	Uganda Green Growth Development Strategy
UN	United Nations
UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre
UNSD	United Nations Sustainable Development
UNSEEA	United Nations System of Environmental-Economic Accounting
UWA	Uganda Wildlife Authority
WAVES	Wealth Accounting and Valuation of Ecosystem Services
ZARDIs	Zonal Agricultural Research and Development Institutes

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1 INTRODUCTION

1.1 Purpose and overview of this paper

Uganda is a regional leader in shaping strategies for *inclusive green growth* – developing ways of better mobilising the rich natural capital that directly and indirectly supports livelihoods and economic growth. The country produced a Green Growth Development Strategy in 2017 that emphasises the importance of managing natural capital for key sectors, and notably agriculture, tourism, energy, transport, and city development. The country has been pursuing a range of green investments since then, using key opportunities such as policy reviews, development planning and budget processes and recently the government's economic stimulus programmes for post-COVID recovery. Some commentators have already noted that Uganda's recovery programmes are far more positive for the environment than those of most countries[1].

At the same time, Uganda has also become a regional leader in natural capital accounting (NCA). NCA exercises have begun to provide Uganda with a systematic statistical framework for measuring and valuing natural capital assets and the services they provide. By combining environmental information and economic information, NCA points to economic activities that are underusing natural potentials, as well as those that are overusing natural capital and degrading it. With UNEP-WCMC support and funding through the UK Government's Darwin Initiative, Uganda has recently produced three new natural capital accounts for fisheries, tourism, and soils/land. All the outputs from the project are available at: https://www.unep-wcmc.org/featured-projects/nca-in-uganda.

The purpose of this paper is to draw on the findings from these new accounts to illustrate what kinds of green growth options can be developed. It has two goals: firstly, to inform green growth policies, economic instruments and specific investments in fisheries, tourism, and land management. For the investments identified, we have focused on the likely jobs to be created, however, more investment appraisal on the costs, benefits, returns on investments, risks and their distribution will also be needed. Our second aim is to encourage further development and embedding of NCA as an integral part of the institutional 'machinery' of green growth modelling, planning, implementation and monitoring. Alongside the three accounts supported by the Darwin Initiative, further accounts with e.g., World Bank and UNSD support, and a Ugandan National Plan of Action on Environmental-Economic Accounts are commended for their potential to support green growth.

[1] Steele *et al.* 2021 forthcoming

1.2 Importance of natural capital and biodiversity to Uganda's development

Natural capital is second only to human capital in Uganda's wealth profile[2]. Uganda is a biodiversity-rich nation and is ranked among the top ten most biodiverse countries in the world. It is host to 53.9% of the world's population of mountain gorillas, 11% (1,063 species) of the world's recorded species of birds (50% of African bird species), 7.8% (345 species) of global mammal diversity (39% of Africa's mammal species richness), 19% (86 species) of Africa's amphibian species richness and 14% (142 species) of African reptile species richness, 1,249 recorded species of butterflies and 600 species of fish[3].

Biodiversity is an essential part of Uganda's 'natural capital stock', underpinning the delivery of the ecosystem services that support economic activity and the well-being of its people. However, the full value of biodiversity is often neglected in traditional assessments of economic progress (GDP), budget resource allocation and development planning, and policy and decision-making processes. Indeed, estimates of the actual contribution of Uganda's biodiversity to the national economy have not been updated since the early 1990s. Nevertheless, the NBSAPII[4] included past estimates putting the gross economic output attributable to biological resource use in the fisheries, forestry, tourism, agriculture and energy sectors at US$ 546.6 million per year and indirect value associated with ecosystem services and functions at over US$ 200 million annually. The tourism industry alone is the highest foreign exchange earner contributing over US$ 1.6 billion to Uganda's GDP (i.e., 7.3%) and employing over 6% of Uganda's labour force (2017/18). The wildlife-watching tourism subsector is entirely dependent on Uganda's natural capital.

1.3 Inclusive green growth as a development focus

The Government of Uganda is increasingly and progressively focused on natural capital as one of the pillars for economic development. The Uganda Green Growth Development Strategy[5] (UGGDS) targets natural capital management as one of five core catalytic investment areas for green growth. The natural capital management component of the strategy focuses on wildlife and tourism; forestry; wetlands, fisheries and water resources (plus their associate sectors). It also highlights the need for more sustainable management of the natural capital stocks underpinning the agricultural sector in Uganda.

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[2] https://www.wavespartnership.org/sites/waves/files/kc/WAVES-Adjusted%20Macroeconomic%20Indicators%20and%20Measures%20of%20Comprehensive%20Wealth%20-Full%20Report%20design%20layout%20October%20Final.pdf

[3] NEMA (2016), National Biodiversity Strategy and Action Plan II (2015-2025) http://nema.go.ug/sites/all/themes/nema/docs/NBSAP%20Uganda%202015%20-%20Re-designed.pdf

3 Government of Uganda (2017/2018 – 2030/31). The Uganda Green Growth Development Strategy, Kampala.

4 NEMA (2016), National Biodiversity Strategy and Action Plan II (2015-2025) http://nema.go.ug/sites/all/themes/nema/docs/NBSAP%20Uganda%202015%20-%20Re-designed.pdf

5 Government of Uganda (2017/2018 – 2030/31). The Uganda Green Growth Development Strategy, Kampala.

This is echoed in the most recent National Development Plan[6] (NDP III), which focuses on sustainable industrialisation to create value and boost incomes. This includes sustainable exploitation and enhancement of forests, fisheries and natural capital linked to the wildlife watching tourism and agricultural sectors.

Despite economic activity that is dependent upon natural capital generating foreign exchange earnings, contributing to employment and sustenance of livelihoods and national Gross Domestic Product (GDP), the omission of information on biodiversity and related natural capital in economic planning, policy instruments and budgetary resources allocation processes distorts the increasingly market-based decisions and has dire consequences for the depletion of the country's natural capital stocks. The loss of benefits from biodiversity also disproportionately impacts the rural poor, since much of their real income is dependent upon functional ecosystems and the services they provide. But if the condition of this natural capital on which poor people depend is not assessed, then it is likely to be poorly included in economic plans for poverty reduction as well as social protection provisions. This calls for a paradigm shift in the current development frameworks – to mainstream natural capital into planning, policies, decisions and other government programmes and development projects. A regular assessment of the stocks and flows of natural capital and the subsequent integration of such information into decision-making and development planning would take us on a far more sustainable development pathway. This is where natural capital accounting comes in.

1.4 A recent focus on natural capital accounting

Natural capital accounts are a set of objective data on the stocks of natural resources, including ecosystems and species, and the flows of benefits they provide. They aim to provide detailed integrated statistics on how natural resources contribute to the economy and how the economy affects natural resources. In recent years, natural capital accounting has become a prominent tool for providing more evidence-based approaches in support of sustainable development, green economy transition and climate change adaptation.

The low prioritisation of biodiversity data and information in the planning and decision making increases the likelihood of inefficient and unsustainable use, and, consequently, the persistence of chronic poverty, food insecurity and human vulnerability that is worsened by the combined effects of climate change and now the COVID-19 pandemic. Therefore, it is essential to identify and integrate information on priority biodiversity-related natural capital (i.e., those stocks of natural capital that include a living component) into development policy and green growth development planning and international processes. These challenges are recognised in Uganda's National

6 NPA (2020). Third National Development Plan for Uganda (Vol. 1, Issue 1). http://npa.ug/wp-content/uploads/NDPII-Final.pdf

Biodiversity Strategy and Action Plan II (NBSAPII), the National Development Plan III (NDPIII) and Uganda Green Growth Development Strategy (UGGDS). Collectively, these plans recognise the need to manage natural capital to deliver economic development and poverty alleviation in an environmentally sustainable manner. The plans also identify natural capital accounting as a strategic intervention towards improved environment and natural resource management.

In this paper, we reflect on how the natural capital accounting approach could foster the creation and maintenance of green jobs in Uganda as a tool and mechanism to improve livelihoods and economic development, enhance innovation and technology, build capacity among citizens, and support development financing. The information provided can be used to facilitate planning and sustainable decision making across government, and to improve the understanding of natural resource users (private sector and communities) on the important role they can play to sustainably manage the natural resources they depend upon.

2 THE PROCESS OF PREPARING THE NATURAL CAPITAL ACCOUNTS

The Darwin Initiative-funded project on 'Integrating National Capital into Sustainable Development Decision Making in Uganda' was not simply a project to prepare accounts. From the beginning, it was 'decision centred, i.e., the accounts were intended to support the delivery of the NDP III, the UGGDS and the NBSAP II by providing better quality information to inform the decisions needed for implementing these key national plans. They will also be important in monitoring the status of biodiversity reporting on international obligations such as the Sustainable Development Goals (SDGs), Post–2020 Global Biodiversity Framework, climate change Nationally Determined Contributions (NDC) and Land Degradation Neutrality (LDN).

Uganda's National Plan for Advancing Environmental Economic Accounting (NP-AEEA) provides a framework for integrated environmental statistical development, taking into account sustainable development and the green economy. The plan seeks to align and coordinate Uganda's current and future Environmental-Economic accounting initiatives and policy requirements with the United Nations (UN) System of Environmental Economic Accounting (SEEA) and other international statistical frameworks. The NP-AEEA provides the foundation for initiating and integrating statistical development towards improving decisions related to and monitoring indicators of sustainable development and green economy (see: https://www.ubos.org/wp-content/uploads/publications/11_2019NP-AEEA.pdf).

The accounts produced under the Darwin are part of the ongoing initiatives in the plan to deliver a set of integrated Environmental Economic Accounts for key policy needs in Uganda. By adopting the common statistical framework of the SEEA, these accounts are coherent with the accounts compiled with support from the World Bank-led Wealth Accounting and the Valuation of Ecosystem Services Partnership (WAVES) project in Uganda (see: https://www.wavespartnership.org/en/uganda) and those produced with support from the UN Statistical Division (see: https://seea.un.org/content/system-environmental-economic-accounting-2015-2018-water-accounts-report).

Uganda's natural capital accounts were developed using the United Nations System of Environmental and Economic Accounting Central Framework and Ecosystem Accounting (SEEA-CF and SEEA-EA) tools. The SEEA CF and SEEA EA are internationally agreed standards, which provide a set of concepts, definitions, classifications, accounting rules and tables for producing internationally comparable statistics on the relationship between the environment and the economy[7].

[7] https://seea.un.org/

The SEEA-EA undertaken in Uganda uses four of the five core accounts of the SEEA EA: it accounts for ecosystem extent, ecosystem condition, physical ecosystem services, and monetary ecosystem services. A brief description of these core accounts follows:

1. ECOSYSTEM EXTENT accounts record the total area of each ecosystem, classified by type within a specified area (ecosystem accounting area). Ecosystem extent accounts are measured over time in ecosystem accounting areas by ecosystem type, over the accounting period.

2. ECOSYSTEM CONDITION accounts record the condition of ecosystem assets in terms of selected characteristics at specific points in time. Over time, they record the changes to their condition and provide valuable information on the health of ecosystems.

3. & 4. ECOSYSTEM SERVICES flow accounts (physical and monetary flows) record the supply of ecosystem services by ecosystem assets and the use of those services by economic units, including households.

The accounts are organised for different sub-national spatial areas (ecosystem accounting areas) that are relevant to decision-making within that sector. This spatial approach also allows alignment with official spatial data on poverty in the country. Additional thematic and extended accounts have also been compiled following the guidance for thematic and extended supply and use accounting in the SEEA EA and natural resources accounting in the SEEA Central Framework.

The accounts were developed by the National Environmental Management Authority (NEMA), in partnership with the National Planning Authority (NPA), the Uganda Bureau of Statistics (UBoS), alongside the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the Ministry of Water and Environment (MWE), the National Forestry Authority (NEMA), Ministry of Tourism, Wildlife and Antiquities (MTWA) and Uganda Wildlife Authority (UWA). Support was provided by the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) and the Institute for Development of Environmental-Economic Accounting (IDEEA Group). The project was also supported by the International Institute for Environment and Development (IIED).

The accounts developed under the project provide an initial overview of the situation and trends. However, future iterations may benefit from additional data and further exploration of the links between different sets of accounts.

The accounts themselves have been supported with a set of institutionalising, capacity building and awareness-raising activities. The project outputs are available via the project webpage at: https://www.unep-wcmc.org/featured-projects/nca-in-uganda.

3 SUMMARY OF KEY NCA RESULTS

The three accounts are summarised below, together with the 'biodiversity vision' they aim to speak to. The stakeholders who were involved in the three accounts noted that NCA is not simply about narrow data – it is about the big picture, too (*Figure 1*). It can widen decision-makers' vision of what is desirable and possible with different forms of natural capital. Continued NCA can then keep that big-picture vision in view, informing monitoring and continually improving decisions. The main findings of the three accounts are summarised in the following sections.

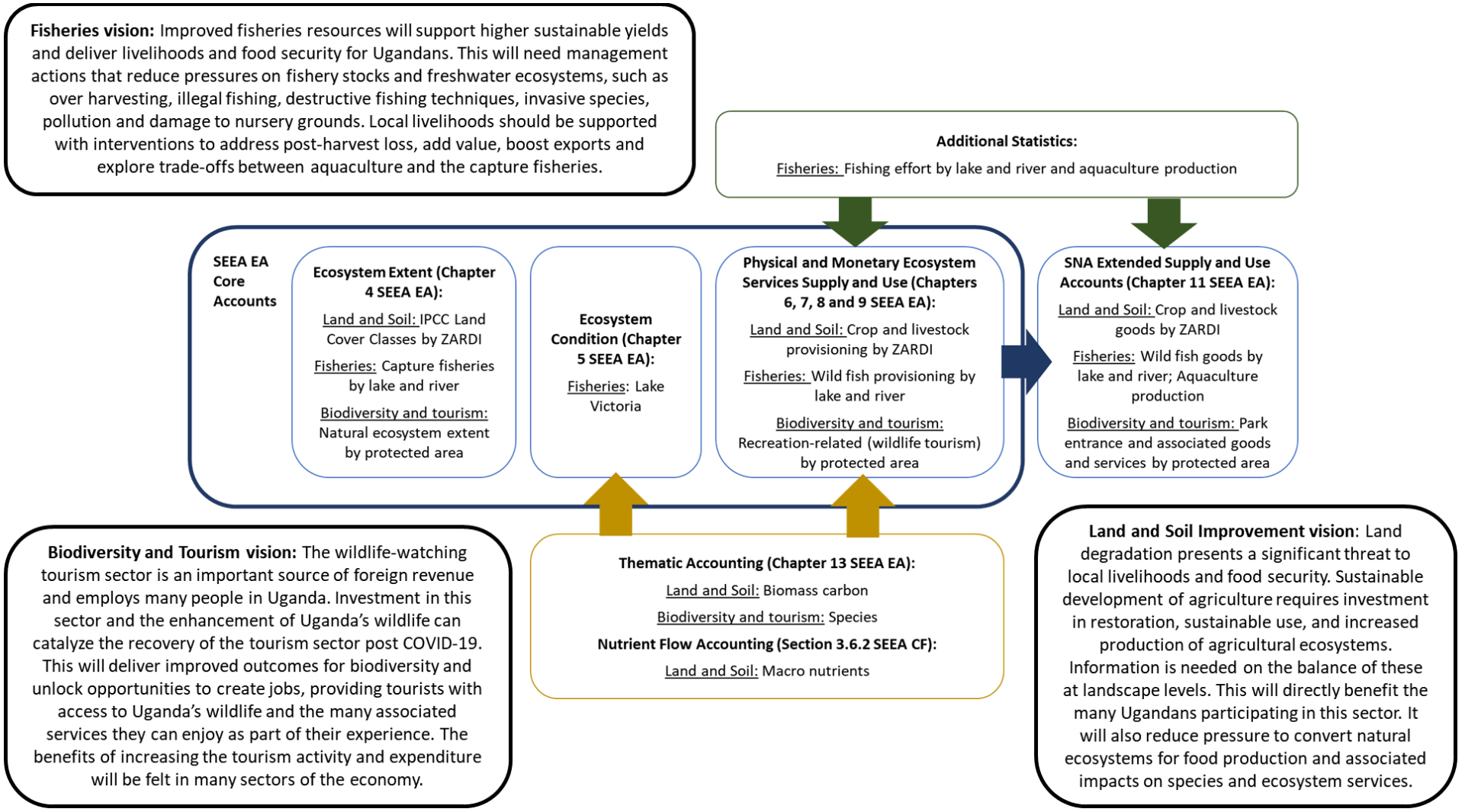
3.1 Biodiversity and Tourism Accounts

This account provides information on the 12 major protected areas (National Parks and Game Parks) supporting wildlife-watching tourism in Uganda. This information includes the extent of natural ecosystems, an abundance of iconic species and the flows of economic benefits associated with the wildlife watching tourism they support.

Biodiversity and Tourism key findings are largely positive, but speak also of unused potentials and the sensitivity of the resource to overuse and damage:

a) The Natural Ecosystem extent has remained high across most National Parks in recent years. This is particularly the case for National Parks with high levels of tourism activity, including Murchison Falls, Queen Elizabeth and Bwindi Impenetrable National Parks.
b) Populations of Iconic Species such as elephants and buffalo have been broadly stable or improved in Murchison Falls, Queen Elizabeth and Kidepo Valley National Parks.
c) There has also been a steady increase in the Mountain gorilla population in Bwindi Impenetrable National Park in recent years. This has revealed itself to be an important source of revenue for UWA.
d) Total expenditure by international tourists on park entrance and imputed expenditure on other products and services tripled from approximately UgX. 34.5 billion in 2012 to UgX. 96.5 billion in 2019 at the 12 Protected Areas considered. This reveals a strong performance of the wildlife-watching tourism sub-sector with respect to increased export revenue (a key UGGDS Goal).
e) The highest wildlife-watching tourism expenditures are associated with Uganda's two largest National Parks, Murchison Falls and Queen Elizabeth.
f) However, other protected areas with rich biodiversity are comparatively neglected in terms of their poverty reduction, employment generation, and income- and revenue-earning potentials.
g) As biodiversity-related tourism develops, it becomes even more critical to monitor the status of the natural capital, as it can be damaged by associated infrastructure development, as well as by neighbouring land uses.

Figure 1: Summary of the three accounts produced under the Darwin Initiative funded project "Integrating Natural Capital Accounting into Sustainable Development Decision-Making in Uganda"



3.2 Fisheries Resources Accounts

These accounts provide information on the six major freshwater lake capture fisheries, the Albert Nile and the Aquaculture sector in Uganda. This information includes fish stocks, water condition, invasive weeds and nursery grounds, where available. In addition, information is provided on fish catch, the economic activities these catches support and fishing effort.

Fisheries key findings speak to the widespread degradation of fisheries, but also the potentials of investment in freshwater ecosystems and aquaculture:

a) Lakes and rivers constitute Uganda's freshwater ecosystems, and the minor lakes are a particularly important source of food and livelihoods to the rural poor.
b) Uganda's capture fisheries resources are experiencing immense pressure due to over-fishing and the rampant use of illegal and unregulated fishing gear.
c) The fisheries accounts identify the proliferation of invasive aquatic species and important nursery habitats. Investment in freshwater ecosystems (i.e., addressing invasive weeds, protecting fish breeding areas) could boost or secure improved fish stocks in the long term.
d) Resource rent calculations in the Fisheries Resources Accounts show, in many of Uganda's fisheries the costs of capital and labour outweigh the revenue from the products.
e) Post-harvest loss in the Mukene fishery amounted to UGX 14.29 billion in 2018. Improved post-harvest facilities could help capture this lost value. Investment in value addition and improved post-harvest processing can take local pressure off the need to increase catch volume (currently the main growth strategy) by providing more employment and more income per fish caught.
f) Aquaculture production has increased from 1,500 metric tons of fish in 2005 to 100,000 metric tons in 2010, and 120,000 metric tons by 2018, associated with fish ponds and cages. However, the sub-sector is still in its infancy, with the majority of the farmers still practising at a small scale.

3.3 Land and Soil Improvement Accounts

The Land and Soil Improvement Accounts provide information for the areas covered by each of the 10 public Zonal Agricultural Research and Development Institutes (ZARDI) in Uganda.[8] This includes information on the broad land-cover change as a result of

[8] Zonal Agricultural Research and Development Institutes (ZARDIs) were adopted as the ecosystem accounting areas (EAAs) for the NCA. This is consistent with Uganda's Annual Agricultural Survey (AAS) and the Uganda National Household Surveys (UNHS) for Uganda's National Statistics Office (NSO), the Uganda Bureau of Statistics (UBOS), and they represent Uganda's agro-ecological zones.

agricultural expansion, implications of land-cover change for annual biomass and soil organic carbon accumulation, nutrient balances for cropland, cropland and livestock production and the economic activity this supports.

The Land and Soil Improvement Accounts' key findings point to several worrying trends that need addressing in green growth strategy:

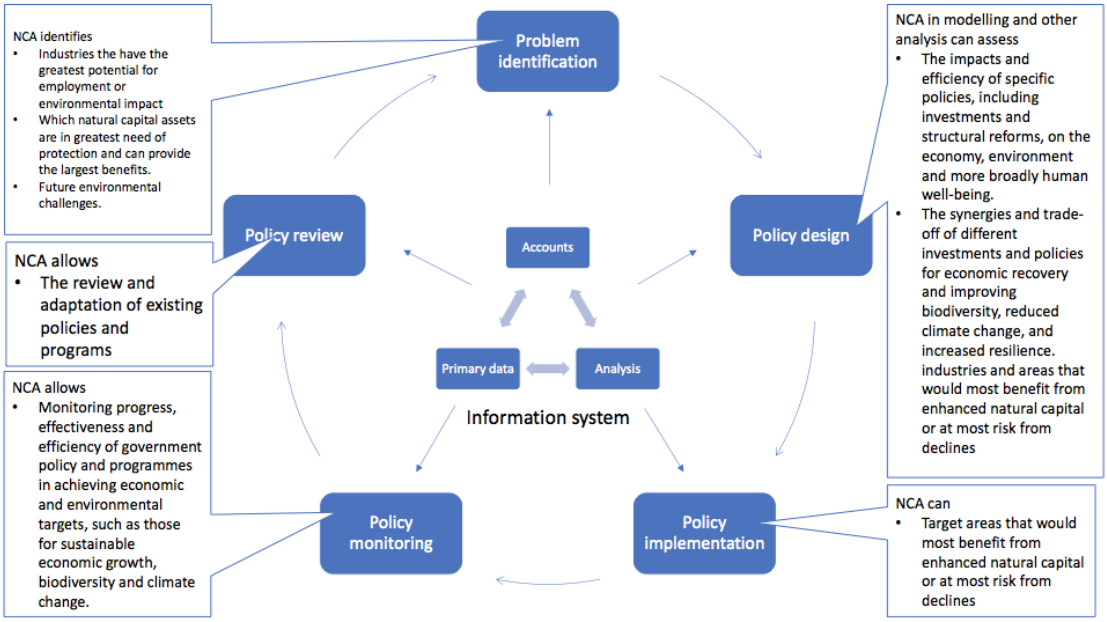
a) Based on the ecosystem extent accounts, 14% of all land-cover changes between 2005 and 2010 were considered indicative of degradation with respect to national goals to increase forest cover and wetland area. Some current agricultural expansion is damaging the soils and water on which it ultimately depends.
b) Soil nutrient depletion is particularly worrying. It increased by approximately 30% between 2009 and 2018. The high net nutrient outflow was the result of soil erosion together with very low nutrient inflows in organic and inorganic fertilisers, crop residues, and atmospheric deposition.
c) The national total annual biomass carbon accumulation within ecosystems was lower by 64% in 2010-2015 compared to 1990-2000. This has been driven by the loss of forests. Soil carbon is also reducing, with negative implications for both carbon storage and soil fertility.
d) The account's ecosystem supply and use tables also showed that 70-80% of the current crop and livestock production is for household consumptive use; in more urbanised areas, the supply and use for business increased.
e) Given the strong livelihood and subsistence roles of land use, where there are missions of actors in the land economy, it is particularly challenging to ensure a coordinated approach. Identifying models of sustainable and mutually supportive land use at the landscape level will be needed as a basis to reach out to farmers, and NCA could help.

4 USING NCA TO SUPPORT GREEN GROWTH POLICY

4.1 How the accounts link with green growth policy

The NCA findings show the intimate linkages between biodiversity-related natural capital and the major strategies and plans that are intended to drive Uganda's development process. The linkages are both positive and negative and clear and therefore more effective management of biodiversity is required if the potentials of green growth are to be realised, the drivers of biodiversity loss are to be tackled, and the low productivity of the core natural resources sectors, agriculture and fisheries, is to be improved (*Figure 2*)[9]. Annex 1 shows the green growth policies reviewed and their relation to NCA and reflects the enormous need for close collaborations, networking and sharing of information.

Figure 2: The policy cycle, natural capital accounting and green recovery.



Adapted from: Vardon M, Burnett P and Dovers S (2016). The accounting push and the policy pull: balancing environment and economic decisions. Ecological Economics 124: 145-152.

4.2 Green growth policy opportunities for NCA

The NCA's further development will be guided by the principles in the Uganda Green Growth Development Strategy, i.e., of inclusive growth and equity, creation of green jobs, resource use efficiency, environmental sustainability, science, technology, engineering

[9] United Nations Development Programme and National Environment Management Authority (2017), Biodiversity Policy and Institutional Review, National Environment Management Authority, Kampala.

and innovation, good governance, partnership and the 2030 transformative agenda on sustainable development. These principles will support the key focus areas such as capacity building/skilling, identifying investment opportunities, technology enhancement and development financing. It is also important to build on existing initiatives where possible (SEEA, natural capital accounting, public environmental expenditures review, etc.)[10].

The strategic direction of the UGGDS roadmap places demands on the institutionalisation and implementation of NCA through its 'natural capital management and development' pillar. This pillar provides for sustainability of forest management, tourism development, sustainable and optimal water resources management and sustainable wetland management.

To attain sustainable natural capital management, the Land and Soil Improvement Accounts point to the following key opportunities:

a) **Using economic incentives associated with voluntary and verified carbon credit schemes**, both through national and international schemes to scale up an increase above-ground biomass/carbon stock accumulation (monitored via information in the land cover and thematic carbon accounts on biomass carbon accumulation).
b) **Technology and NRM that increases land-use efficiency and productivity** through such schemes, which will directly benefit rural population with a high dependence on subsistence agriculture (monitored via information on yields and planted area/cropland area and variations across ZARDIs).
c) **Taking an integrated approach to land-use planning**, which could also deliver better outcomes for biodiversity by reducing future land requirements for agriculture and conserving natural ecosystems (including forests and wetlands) (monitored via land cover accounts).
d) **Using an agreed sustainability indicator** will support the streamlining and correcting the errors of commission and omission when attributing the contribution of land and soil resources to commodity value chains.

Increasing value addition for crop and livestock value chains (as revealed by information in intermediate consumption in the SNA Goods and Services Accounts) will be critical to generating sustainable market-led incentives for reinvestment in land and soil resources, alongside streamlining the commodity value chains, as envisaged in the NDPIII. Focusing on sustainable forestry and wetland management, in particular, key opportunities include:

[10] UNDP (2018), The BIOFIN Workbook 2018: Finance for Nature. The Biodiversity Finance Initiative. United Nations Development Programme, New York.

regular and systematic updates of the species accounts; aligning annual calendar and government financial year reporting to different visitor statistics and revenue streams; and applying resource rent approaches to isolate the ecosystem service contribution.

For *fisheries,* in particular, key opportunities include:

a) Promoting aquaculture (currently concentrated in the central region) across the entire country. This will reduce the immense pressure on the capture fisheries (monitored by information on aquaculture production).
b) Identifying and gazetting more fish breeding areas (FBAs), including gazetting some areas (particularly those associated with FBAs) in the lakes as no-fishing zones, and increasing efforts in wetland protection, conservation and removal of invasive aquatic weeds (monitored via ecosystem condition accounts for capture fisheries).
c) Establishing baseline lake-wide water quality monitoring programmes to regularly assess the ability of the ecological condition of the water bodies to support fisheries resources (to inform ecosystem condition accounts for capture fisheries).
d) Developing and implementing a monitoring mechanism to capture regional fish exports and imports that often go unrecorded (to inform ecosystem service and SNA goods and services accounts).
e) Setting a standard on fish factory processing with emphasis on value addition such as fish canning (increased value addition would be revealed as increased intermediate consumption of fish in the sub-sector SNA goods and services accounts).

Conserving and maintaining key areas of natural ecosystems, and supporting iconic species, has clear benefits for both biodiversity and the *tourism* industry. Key recommendations for this are as follows:

a) Develop a plan for the tourism sector to drive post- COVID-19 economic recovery. This should include strategic investment in the wildlife-watching tourism sub-sector: it is pivotal to growth in the sector overall (monitored by Ecosystem Services and SNA Goods and Services Accounts).
b) Maintain funding to conserve and enhance Uganda's natural ecosystems and iconic species - both essential to the success of the tourism sector over the medium term and long terms. Economic activities that offer short term gains but threaten the viability of the sector in the medium and long terms must be avoided (monitored by Natural Ecosystem Extent and Species Accounts).
c) Promote investment in innovative tourism packages, access and tourist facilities, not only in the most popular parks but in less-visited destinations too (monitored

by Ecosystem Services and SNA Goods and Services Accounts). In addition, encourage domestic tourism through development of appropriate and affordable tourism packages and local promotional programmes.

d) Involve local communities in collaborations to start new businesses and create jobs in the tourism sector, to alleviate poverty (monitored by local employment statistics or inferred from revenues revealed in the SNA Goods and Services Accounts). Community and home-based tourism packages are critical in promoting local participation, inclusiveness and equitable distribution of the benefits from tourism.

5 USING NCA TO SUPPORT GREEN GROWTH INVESTMENTS

The UGGDS specifically seeks to attract investment in projects that achieve economic growth, poverty reduction, improved human welfare, and employment creation *whilst safeguarding the integrity of the environment*. In other words, building wealth sustainably. Even the early NCA accounts to date are beginning to point to investment activities that realise higher value from environmental 'assets' (or natural capital), increasing stocks of biodiversity-related natural capital, such as forests, and improving net benefit flows. But they also point to the kinds of investments that will prove to be failures where they deplete stocks of natural capital and do not provide adequate compensation (in terms of other forms of capital wealth) especially to poor groups who depend on natural capital. Thus, NCA has a project-level application as well as policy applications as discussed.

Planners and financing bodies are increasingly under pressure to generate investments that maximise poverty alleviation benefits as well as deliver better long-term outcomes for biodiversity. With the caveat that the early natural capital accounts information is incomplete as yet, this section highlights specific green growth development options for creating jobs in the ecosystem accounting areas where there is high poverty incidence. There is not yet the data for exploring the income- and revenue-earning potentials, but this can be built into future NCA work. The options presented are non-exhaustive examples, that were indicated by the results and conclusions from the accounts, and for which some general estimates of job creation could be produced. These estimates are based on those included in existing development projects, studies, policies, and other grey literature, where job creation and employment statistics are provided in similar circumstances.

5.1 Agro-industrialisation green growth development options

The UGGDS identifies agriculture as a core investment area for green growth since many people and much of Uganda's natural capital assets are within the sector. It seeks to upgrade the value chain for enterprises, increasing the value added by agro-processing businesses, and creating jobs. The NDP III, too, sets out agro-industrialisation as a key strategy to stimulate increase in production and productivity through increased use of improved inputs, further agricultural research, and reduced post-harvest losses.

5.1.1 Area-Based Planning for sustainable agro-industrialisation

The NDP III sets out Area-Based Commodity Planning orientated around a set of related interventions to achieve a common objective. Area Based Commodity Planning consists of clustering districts into agro-ecological zones and then developing projects that address 'bottlenecks' for increased productivity, value addition, and wealth creation.

The way that the Land and Soils Accounts are organised by ZARDI, and the Fisheries Resources Accounts organised by capture fisheries, would support these types of subnational planning activities. As revealed by Figure 3, districts with relatively high poverty incidence in Uganda and suitable natural capital could be targeted to create green growth opportunities and jobs – and Buginyanya, Nabuin and Ngetta ZARDIs are highlighted in particular. For Buginyanya, this could comprise an integrated approach to agricultural and fisheries development around the eastern shores of Lakes Victoria and Kyoga.

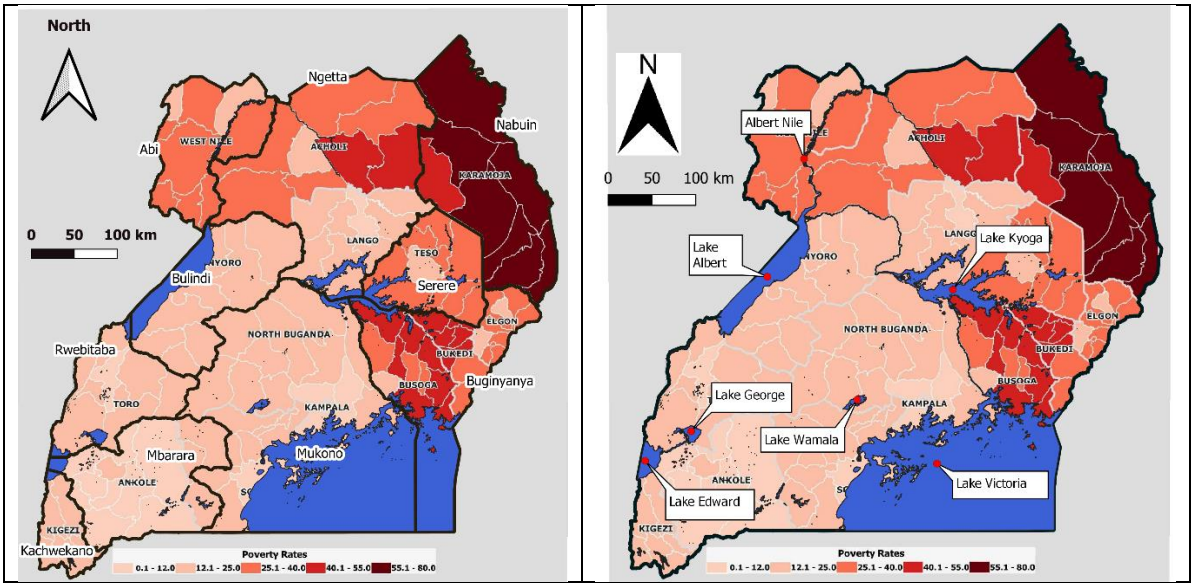


Figure 3: Poverty Head Counts by District and location of ZARDIs and Capture fisheries for Uganda

5.1.2 Key NCA findings with respect to green growth and agro-industrialisation

The natural capital accounts compiled via the Darwin project make explicit the link between natural capital and the economic activities it supports. The *Land and Soil Improvement Accounts* aim to inform on the relationship between land use and agricultural production and the delivery of other ecosystem services, and so support more holistic planning of the sector. The *Fisheries Resources Accounts* articulate the link between the condition of freshwater ecosystems, fish catches, and economic activities in the sub-sector. Key findings from the accounts with respect to the Buginyanya, Nabuin and Ngetta ZARDIs are summarised below:

- Buginyanya ZARDI – There is a relatively high net loss of wetland extent due to conversion to agriculture – approximately 18,500 ha between 2005 and 2015. This is associated with highly negative nutrient balances in cropland (losing 38

kg/ha/year), driven by soil erosion and crop uptake. This, despite increases in cropland extent (approx. 58,500 ha between 2005 and 2015), there was a physical reduction in crop production in this ZARDI between 2005 and 2015. A majority of the expansion of cropland (approx. 42,000 ha) was due to the conversion of forest or wetland.

As shown in Figure 3, the eastern extent of Lake Victoria and Lake Kyoga are associated with the Buginyanya ZARDI. This is an important fishery for both lakes. Whilst information is incomplete, the *Fisheries Resources Accounts* identified the invasive weed proliferation (water hyacinth and Kariba Weeds) as a known issue for the condition of these capture fisheries. Furthermore, the accounts showed that post-harvest losses in the Mukene Fisheries are also significant, estimated to be around 30%.

- Nabuin ZARDI - There was a relatively high net loss of forest extent between 2005 and 2015 (approximately 195,500 ha), although only around 26,000 ha was converted to cropland. Whilst cropland extent reduced between 2005 and 2015, crop production increased three-fold in physical terms. This is associated with relatively high-intensity planting of cropland area, but it has also seen losses of soil nutrients (-75 kg/ha/year), due to soil erosion and crop uptake. There is also a very high turnover in cropland areas (i.e., gross changes in extent compared to net changes), suggesting shifting patterns of agriculture to different areas.

- Ngetta ZARDI - Relatively high net losses in forest and wetland extent are observed between 2005 and 2015 (approximately 619,500 ha and 21,000 ha, respectively). This is driven by conversion to cropland, which accounts for approximately 412,500 ha of forest and wetland reduction over this period. This is associated with an increase in physical crop production of around a half but a relatively low-intensity planting of cropland area (42%). Negative nutrient balances are also observed for this ZARDI (losses of 42 ha/kg/year).

5.1.3 Green growth development options for agro-industrialisation

The key recommendations from the Land and Soil Improvement accounts were to implement integrated land-use planning at a local scale and to incorporate sustainable land management (SLM) activities. The recently completed Agricultural Technology and Agribusiness Advisory Services Project in Uganda identified the following measures for scaling up SLM: terraces, contour and grass bunds, conservation agriculture (low-till), rehabilitation/reclamation of degraded watersheds, agroforestry woodlots, agronomic/vegetative SLM practices (e.g. mulching, intercropping, rotations, integrated nutrient management, grassland improvement), small-scale irrigation, and water

harvesting. [11] Similar recommendations are also made in the *Land and Soil Improvement Accounts* report.

The need to scale up these types of SLM interventions is also highlighted in a recent report from the World Bank.[12] One way of scaling up SLM is using ***Labour-Intensive Public Works***, which also create jobs and reduce poverty. The World Bank report a case for Ghana, where 902 labour-intensive public works projects provided short term employment for 167,243 people living in extreme poverty and paid wages in excess of USD 17 million. Broadly, this reflects 150 temporary jobs per labour-intensive public work project. Conservatively, establishing one such project per ZARDI to ***construct terraces, contour and grass bunds*** to address soil erosion and associated nutrient loss in hot-spot areas would yield 450 temporary green growth jobs. These types of jobs would provide much-needed work following the impact of COVID-19 on employment, as well as improve the land-use efficiency and sustainability for agricultural production and reduce pressure to convert natural ecosystems. Any such on-the-ground interventions should recognise existing land tenure and socio-cultural norms and fully consider established agricultural cropping patterns.

The World Bank report also highlighted the threat to sustainable development posed by the conversion of forest and wetland to agricultural land use. Additional ***Labour-Intensive Public Works for Wetland Restoration*** could be instigated in the Buginyanya and Ngetta ZARDIs, given significant reductions in the extent of wetlands between 2005 and 2015. This would help to deliver national targets for wetland restoration and improve important ecosystem services supply, for instance, with respect to water regulation and improved local resilience to climate change.

Experience in establishing ***agroforestry woodlots*** in Uganda has shown that these types of interventions can be targeted to create livelihoods for women. The WALA Women Group Community Tree Planting Approach in Northern Uganda supported 37 women in establishing woodlots and associated product sales.[13] This also helped to tackle soil erosion and soil fertility loss issues. Similar interventions in the Nabuin and Ngetta ZARDIs would be particularly appropriate given the noted loss of forest cover in these ZARDIs. This, in turn, would reduce pressure on natural forests and woodlands for wood fuel and help deliver on the NDP III target for increased forest cover. Options should also be

[11] Financed by the Government of Uganda, World Bank and IFAD: https://www.ifad.org/documents/38714182/43228903/uganda_ppe_FINAL_100621.pdf/2075704f-9e18-d0ff-614e-1abc158018c0?t=1623421748538

[12] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/265371623083730798/uganda-economic-update-17th-edition-from-crisis-to-green-resilient-growth-investing-in-sustainable-land-management-and-climate-smart-agriculture

[13] https://qcat.wocat.net/en/wocat/approaches/view/approaches_2767/

explored with respect to voluntary and verified ***carbon credit schemes***, as a means of generating revenues from these types of initiatives.

5.1.4 Fisheries and aquaculture

Infestation of freshwater ecosystems by *invasive weeds* is known to reduce fish stocks and hinder fishing activity. In 2004, the African Development Bank-funded a set of projects in West Africa that aimed to tackle this issue in several countries. The project appraisal estimated that production losses to the fishing industry could be as high as 20% in heavily infested waters.[14] A key part of the project activities focused on the ***manual removal of invasive weeds by workers*** from the local community. For each community, the project trained 20 persons in manual invasive weed removal techniques. A strategy was then developed for transforming these weeds into compost fertilisers for high-value crops. Conservatively, 20 jobs could also be created for each of the Lake Kyoga and Lake Victoria Areas in the Buginyanya ZARDI. Those employed in these jobs could also contribute to lake monitoring to improve the Fisheries Resources Accounts over time. The ***production of compost fertilisers*** could also subsidise government payments for wages. The removal of weeds from Lake Victoria would also help deliver on ambitions for transboundary cooperation on lake management.

The third National Development Plan for Uganda (NDP III) highlights ***fish and fish product value chain development*** as a core project idea. For Lakes Victoria and Kyoga, Mukene represents a large proportion of the total physical catch. However, the post-harvest loss is high and the value of catch relatively low. Often, processing simply involves spreading the fish directly on the ground or on mats to be sun-dried.[15] This method is unhygienic and exposes the fish to contamination and leads to a high level of losses because of poor handling and drying on bare floors.[16]

Training producers on better post-harvest handling of produce will not only address these losses but also create a pathway to higher-value products for local, national and international markets. At a recent town hall meeting on enhancing agro-industrial value chains, the lucrative potential value of the fish value chain was highlighted as a means of creating employment for the youth and women of Uganda[17]. A representative of the Kiyindi Women Fish Processors Association highlighted "a Kilogram pack of Mukene snacks goes for UgX 15,000 whereas the normal quality fetches between UgX 6,000 to UgX 7,000". Over 150 residents of Kiyindi have recently received skills training in such

[14] https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Multinational_-_Invasive_Aquatic_Weeds_-_Appraisal_Report.pdf
[15] https://hdl.handle.net/20.500.12348/923
[16] http://www.fao.org/3/i1798e/i1798e00.htm
[17] https://includeplatform.net/wp-content/uploads/2021/04/FILE-3-Uganda-report-Fish-value-chain-dialogue.pdf

Mukene value addition activities and associated livelihood opportunities via the World Bank Skills Development Project (SDF) of the Private Sector Foundation of Uganda.[18]

There is potential to replicate efforts to build fish processing skills and establish value addition activities within the Mukene fisheries on the shores of the Lake Kyoga and Lake Victoria Areas in the Buginyanya ZARDI. Assuming that the same scale of activity as the Kiyindi skills training programme could support a potential 150 jobs suitable for women across both of these lakeside communities (i.e., 75 at Lake Koga and 75 at Lake Victoria as a conservative target). Whilst, likely, such persons would already be engaged in the sector, it is very likely that their incomes will be low, and this intervention would create decent work opportunities. A more locally vertically integrated supply chain that makes more efficient use of fish would also contribute to more sustainable use of biodiversity-related natural capital by addressing loss and generating higher levels of economic activity from the same, or even lower, levels of inputs.

The NDP III identifies aquaculture parks as part of the potential agro-industrialisation programme (i.e., integrated facilities with fish ponds, hatcheries and feed stores). Several districts in the Buginyanya ZARDI are identified for aquaculture and the Fisheries Resources Accounts highlight the need to develop this where appropriate. A recent feasibility assessment for an aquaculture park to the west of Lake Kyoga identified that this could create 43 employment opportunities in Phase 1.[19] Similar opportunities are likely to exist to the southeast of Lake Kyoga in Buginyanya.

Aquaculture parks have potential as scale-up catalysts. Pond-based fish farming is already commonly practised by farming families in Uganda, with average participation estimated to be 4 household members per fish farm.[20] As such, developing 10 small-scale fish farms and training 10 families in aquaculture and associated farm management could create a potential 40 decent work opportunities. Establishing these in proximity to the aquaculture park would allow easy access to necessary inputs for small-scale aquaculture production, thereby overcoming a key barrier aquaculture production currently faces.

The development of aquaculture would also reduce pressure on capture fisheries. Consideration could also be given to expanding integrated aquaculture productions systems involving fish production with rice, poultry and pig production. These diversified production systems may create more resilient local livelihoods, as a source of feed for

[18] https://www.newvision.co.ug/news/1522164/160-skilled-mukene-value-addition

[19] https://finance.go.ug/sites/default/files/press/Final%20Report-Feasibility%20Study%20for%20proposed%20AquaPark%20site%20in%20Apac.pdf

[20] https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5c493162f&appId=PPGMS

production and improve food security via a variety of farming outputs. NCA could help identify appropriate locations for these.

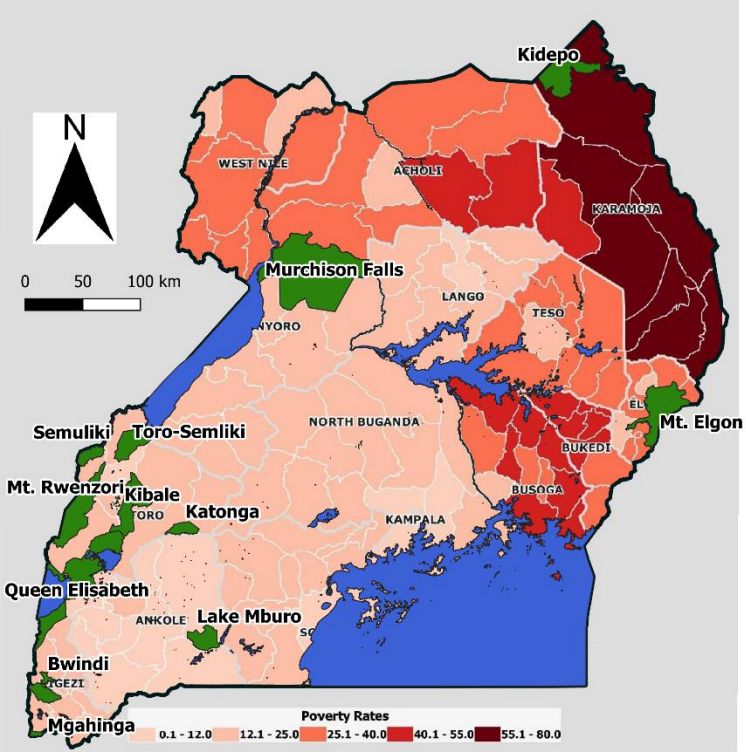
5.2 Tourism Options for Green Growth

The UGGDS identifies natural capital management and development as a core investment area, with tourism development as a strategy to reward investment in biodiversity-related natural capital. The NDP III also sets out the 'Harness the Tourism Potential' as a key development strategy. Chapter 8 of the NDP III concerns tourism development, highlighting its importance for increased foreign exchange earnings, job creation and poverty alleviation. It sets out ambitions to increase inbound tourism revenues by around 50% over the next 5 years.

The NDP III prioritises interventions to increase the stock and quality of tourism infrastructure, recognising the need to improve accommodation around national parks. Other interventions to develop, conserve and diversify tourism products are set. These include expanding the range of nature-based and adventure tourist products, developing competitive tourism packages and the importance of conserving natural heritage underpinning the sector. NCA could help to pinpoint the optimum locations for these investments. The importance of nurturing local hospitality sector enterprises and their skill base to ensure decent work opportunities is also highlighted. Increasing accessibility to National Parks, to both domestic and international tourists, through upgrading and improving existing infrastructure, and, for example, increasing direct flight routes to Europe and Asia, is also an important intervention. This infrastructure development has been allocated USD 600 million, according to a recent article.[21]

The Biodiversity and Tourism Accounts show areas with extensive natural ecosystems and good populations of iconic species that are of interest to wildlife-watching tourists. The consideration of visitor numbers then allows an understanding of the National Parks with as yet unexploited tourism potential. Finally, combined presentations with information on poverty incidence allow the identification of the National Parks with unexploited tourism potential, in areas where tourism-related jobs and revenue could increase incomes and reduce poverty.

[21] https://allafrica.com/stories/202102110803.html



5.2.1 Key NCA findings with respect to tourism development

The Biodiversity and Tourism Accounts identified several areas as having good but underdeveloped potentials for tourism. These have a diversity of species of interest to wildlife-watching tourists, a significant extent of natural ecosystems, but currently low visitor numbers. Kidepo Valley National Park was identified through the accounts as having great potential benefits from development for local communities, due to the high incidence of poverty around the park. Increased employment opportunities would support objectives of poverty reduction.

More specifically on Kidepo valley National Park, NDP III notes the intention to upgrade Kidepo Airstrip to promote trade and tourism, which appears to be being realised as part of a USD 600 million investment in tourism infrastructure announced in February 2021. Under the Tourism Development Master Plan 2014-2024[22], Kidepo is included in one of six proposed 'Tourism Development Areas', through which many development interventions are proposed. These notably include plans to improve access to and within Kidepo (e.g., by paving roads) and to increase the supply of accommodation.

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https://uganda.wcs.org/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=36754&PortalId=141&DownloadMethod=attachment

Elsewhere, the Biodiversity and Tourism Accounts identify large areas of Tropical High Forest that occur in the Rwenzori Mountains and Mount Elgon National Parks. However, tourist visits and expenditures are low in these protected areas. Given these environs, opportunities could be considered for innovative tourism packages, such as mountain forest adventure experiences.

5.2.2 Green growth development options for tourism development:

Before the COVID-19 pandemic, Kidepo Valley National Park accounted for 12,648 visitors during the 2019 calendar year, just 6% of the total visits to Uganda's National Parks[23]. The split of these visitors between international tourists and domestic tourists, and those who are staying in paid accommodation facilities as opposed to those who are staying with friends and family, is not known. According to the Tourism Development Master Plan 2014-24, there were only 33 hotel rooms in and around Kidepo. These appear to be within four separate accommodation units.

With access infrastructure including the tourism roads and the Uganda airlines already being addressed through the National Development Plan III, the main challenge to the development of tourism in Kidepo Valley National Park is the need for additional hospitality infrastructure, and, with that, local commerce supplying consumables and handicrafts to business and tourists alike. Given the low number of current visitations, the aim of doubling visits seems a very achievable goal.

A large number of temporary jobs would be created during the development and upgrading of the existing infrastructure to improve access to the National Park. A small number of permanent jobs would be created for its maintenance and upkeep, and, primarily, to enable the aerodrome to handle increased flights and additional passenger numbers, arriving and departing.

Once established, hospitality infrastructure (hotels, restaurants, other facilities) will provide several decent work opportunities. The average tourist accommodation facility provides 7 jobs[24]. Doubling the offering of hotel rooms available, to 66 rooms, through an additional 4 accommodation facilities, could provide 28 additional jobs. It is noted that hospitality jobs are dominated by women, at a ratio of 4:3, meaning a potential 16 jobs for women.

[23] Ministry of Tourism, Wildlife and Antiquities Analytical Report on Visitation to Uganda's National Parks in Cy2020 and Cy2021. Available at: https://02826de6-506e-42ce-ac67-e9e63c7051de.filesusr.com/ugd/1e6d1c_fe860fdcb51e4718949bdbc45f2215a0.pdf

[24] Ministry of Tourism Wildlife and Antiquities: Hotel and Accommodation Statistics Survey Analytical Report for 2020 https://02826de6-506e-42ce-ac67-e9e63c7051de.filesusr.com/ugd/1e6d1c_30b5fc1fa29e4a2c93335a64c9fdedd7.pdf

Additional visitors also established a consumer base for increased local commerce, for example, shops selling food, supplies, handicrafts. The average arts and crafts commerce employ 2 people (pre-COVID-19)[25]. In addition, tourist development will require some level of access to consumables (food and drink). The exact number of businesses required – and the number of jobs that will create – is hard to determine, but a conservative estimate could be one such establishment per accommodation facility, meaning a total of 8 jobs. In addition, it could be expected that jobs would be created to provide essential services such as guarding, guiding tourists, and managing and restoring natural ecosystems within the protected area (assets). However, no suggested figures were available to enable an estimate of what this might mean for Kidepo National Park.

5.3 Conclusion – towards embedding NCA into the green growth transition

The brief overview of the revelations from NCA about the potential for green growth shows the need to protect biodiversity, building resilient ecosystems and promoting sustainable management of natural capital. NCA methodologies could support evidenced-based planning, policies and decisions, however, the SEEA being relatively new, this will require capacity building among institutions who assess these data tools.

If growth is to become 'green', then a comprehensive balance sheet of natural capital stocks, and their accumulation and/or depletion, along with measures of green benefit flows of diverse types, is needed. NCA provides this: it has been developed as a common system that works for environmental scientists, economists and statisticians and can thus form a core of the modern, integrated information systems needed by decision-makers for managing the environment and the economy, so they thrive together.

Key recommendations for embedding NCA and building NCA capacity to help guide Uganda's green growth transition include:

a) Mainstream and integrate NCA into government programs to create ownership of accounts to support planning, purposed decision making and implementation frameworks.
b) Strengthen data management and sharing protocols among stakeholders.
c) Increase capacity building to strengthen NCA continued development as well as hands-on data modelling using NCA data.
d) Develop Tier 2 and Tier 3 default factors to increase the precision of measurements to support GHG emissions reduction obligations.

[25]Ministry of Tourism Wildlife and Antiquities: Towards Recovery from the Impact of Covid-19 on the Tourism Sector in Uganda: April 2021 https://02826de6-506e-42ce-ac67-e9e63c7051de.filesusr.com/ugd/1e6d1c_4f28fe802a6a4ceab6bb13aaf3dd4d0f.pdf

e) Develop integrated ecosystem services accounts that recognise and inform synergies and trade-offs between and across sectors with respect to natural capital investments and impacts.
f) Promote institutionalisation of NCA and adopt an environmentally extended Social Accounting Matrix (SAM), as well as economic applications through simulations of the macroeconomic models.
g) Increase public education and awareness about NCA to all stakeholders.
h) Introduce incentives in line with the valuation of nature's contribution to people.
i) Strengthen institutional partnerships, south-south and north-south cooperation to facilitate capacity building, information exchange and sharing of experience, and mobilisation of resources to support development of NCA.

Investing in NCA is essential for equipping decision-makers with the information they need for informed sustainable development based on green growth. The accounts produced under the Darwin project contribute to the coherent information set on natural capital and its benefits being delivered under Uganda's NP AEEA. As set out in this document, they can inform planning for investment in natural capital and its use in a way that creates jobs, boosts incomes, alleviates poverty and delivers better long-term outcomes for biodiversity. For example, via labour intensive work to address land and ecosystem degradation, via the establishment of value addition activities and diversified livelihoods and via sustainable development of the tourism industry. The possibilities in these regards are summarised below in Table 1.

Table 1: Summary of Job Creation from Growth Development Options

Ecosystem Accounting Area	Green Jobs intervention	Estimated temporary jobs	Estimated permanent jobs	Opportunities likely to be accessible to women?
Agro-industrialisation				
Buginyanya	Using Labour Intensive Public Works for establishing SLM infrastructure	150		
	Using Labour Intensive Public Works for wetland restoration	150		
	Manual invasive weed removal and composting in Lakes Victoria and Kyoga		40	✓
	Improving post-harvest processing in Mukene Fishery		150	✓
	Establishing an aquaculture park		43	
	Promoting local small-scale aquaculture production		40	
Nabuin	Using Labour Intensive Public Works for establishing SLM infrastructure	150		
	Establishing agro-forestry woodlots		37	✓
Ngetta	Using Labour Intensive Public Works for establishing SLM infrastructure	150		
	Using Labour Intensive Public Works for wetland restoration	150		
	Establishing agroforestry woodlots		37	✓
Tourism Development				
Kidepo Valley	Accommodation/hospitality		28	✓
	Access infrastructure (roads, aerodrome)	TBC	TBC	
	Local commerce (food and drink, handicrafts)		8	✓
	TOTAL	750	383	

6 ANNEX 1: POLICY PRIORITIES RELATED TO THE NCA

Policy or strategy	Main objectives regarding biodiversity-related natural capital	Potential roles for biodiversity-related NCA in achieving objectives
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 and regularly tracking progress – to inform decision making for achieving the goals of Uganda's Vision 2040, the NDPs, UGGDS, NBSAP II and the SDGs and delivering enhanced livelihoods and food security generally.
Uganda National Development Plan III (2020/2021 – 2024/2025)	Aims to increase household incomes and achieve an improved quality of life for Ugandans via sustainable Industrialisation for inclusive growth, employment and wealth creation. This includes increasing stocks of biodiversity-related natural capital, such as forests. Interventions proposed under the ENR sub-sector relevant to biodiversity integration include a reference to (1) developing a database system for ENR for integration in the national accounting system, (2) implementation of the green economy initiatives including integration of environmental sustainability into planning and implementation of development processes, (3) expanding research on economic, ecological and socio-cultural values of ecosystems and biodiversity, (4) developing and strengthening national, regional and international partnerships and networks in environment and natural resources management, (5) strengthening management of environmental aspects of oil and gas and other finite	Providing indicators to regularly track progress, interpret findings, and inform decision making for achieving the goals NDP III. Providing a synthesis and detail for the implementation of actions in the plan. Providing information for integration of the actions within the plan across programmes. Identifying knowledge gaps to focus research. Generating key messages on economy-environment links to help with awareness programmes.

	resources such as water and land, and (6) increase public awareness on ENR opportunities, green economy and sustainable consumption and production practices.	
National Green Growth Development Strategy (UGGDS) (2015-2030)	Aims to achieve economic growth, poverty reduction, improved human welfare and employment creation whilst safeguarding the integrity of the environment. 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 regularly track progress, interpret findings, and inform decision making for achieving the goals of the UGGDS.
National Biodiversity Strategy and Action Plan (NBSAP) (2015-2025)	Proposed actions under this target 4.1 include developing and using biodiversity and ecosystem services valuation tools to quantify and monitor the environmental, economic and social value of biodiversity as well as to mainstream biodiversity into decision making and to develop a business case for biodiversity (1.1.6 and 1.1.8), developing guidelines for mainstreaming biodiversity into national, sectoral and district plans (1.1.7), and mapping of the status and trends of ecosystems (especially forests, wetlands and rangelands) (1.1.9).	Providing indicators to track progress and inform decision making for achieving the goals of the NBSAPII. Generating figures on the changing values of biodiversity assets and their services, to help improve investment in biodiversity and its management

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.	Providing information to support gender-disaggregated data on biodiversity dependence and use for reporting.
Uganda's Draft Mining and Mineral Policy 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 the 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 others.	Providing an integrated information system that can assist in planning and monitoring 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 energy investments.
Water Policy	The policy addresses, in varying degrees, development, poverty and livelihoods issues that are associated with water catchment ecosystems and biodiversity.	Providing 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.	Providing data and information on biodiversity and its role in addressing these issues e.g., food security.

State of Environment reports	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.	Providing 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 can be used to inform a natural capital approach when planning for 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.	Helping demonstrate the commitment to the Gaborone Declaration, and also show trends in natural capital.
Uganda 2018 Budget	Biodiversity dependent sectors such as tourism, agriculture and water and sanitation feature in Uganda's Budget for 2018, which prioritised environment/biodiversity dependent sectors.	Helping inform the budget prioritisation.

*The table is not intended to be comprehensive. It picks out the main policy initiatives relevant to natural capital, their main objectives, and illustrative roles for NCA, but not all of them.

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