



# Integrating Natural Capital into Sustainable Development Decision-Making in Uganda

A project funded by the UK Government

# **Biodiversity and Tourism Accounts for Uganda**



Metadata Report

April 2021











#### April 2021

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Citation: NEMA (2021), Biodiversity and Tourism Accounts Metadata Report,

ISBN: 978-9970-881-22-2

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"Integrating Natural Capital Accounting into Sustainable Development Decision-making in Uganda" is a project funded by the Darwin Initiative through the UK Government, and implemented by the National Environmental Management Authority (NEMA), Uganda Bureau of Statistics (UBoS) and National Planning Authority (NPA) in Uganda, in collaboration with the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), the International Institute for Environment and Development (IIED) and the Institute for Development of Environmental-Economic Accounting (IDEEA Group).

https://www.unep-wcmc.org/featured-projects/nca-in-uganda

#### **SUMMARY**

This metadata report provides a concise description of data used and the data requirements to develop the Biodiversity and Tourism Accounts for Uganda. The meta-data will support coordinated efforts to establish regular data sharing, access and collection arrangements that support future compilations of the Biodiversity and Tourism Accounts.

The metadata is presented in two tables. The first table covers the information used for the development of the account, while the second table covers the information for the future development of the accounts. The metadata table is a hybrid based on the standard format used by the Uganda Bureau of Statistics (UBOS) and extensions included as part of the Biodiversity and Tourism Accounts development. The metadata report was discussed and agreed upon between UBOS, and the expert working group for developing the Biodiversity and Tourism Accounts.

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#### 1.0 INTRODUCTION

This meta data report is an output from the project for "Integrating Natural Capital Accounting into Sustainable Development Decision-making in Uganda". The metadata specifically addresses the data needs for developing the Biodiversity and Tourism Accounts for Uganda.

The National Environment Management Authority (NEMA), the UN Environment World Conservation Monitoring Centre (UNEP-WCMC), National Planning Authority (NPA), Uganda Bureau of Statistics (UBOS), the Institute for International Environment and Development (IIED) and the Institute for the Development of Environmental-Economic Accounting (IDEEA) are implementing the project on "Integrating Natural Capital into Sustainable Development Decision Making in Uganda" is timely. The project is funded by the Darwin Initiative through UNEP-WCMC. The project aims at supporting: (i) the delivery of the Ugandan National Development Plan, Green Growth Development Strategy and the National Biodiversity Strategy and Action Plan (NBSAP); (ii) integration of 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.

This Darwin-funded Natural Capital Accounting (NCA) project developed three sets of natural capital accounts, as identified by relevant government agencies. The accounts prioritized were;

- Biodiversity and Tourism Accounts: To organize data on major tourism sites and their species and habitats, to highlight the value of tourism expenditure related to Uganda's iconic species.
- Land and Soil Improvement Accounts: To understand the changing quality of Uganda's land and its constituents, e.g., biodiversity content and soil fertility to draw policies for better land management practices.
- Fisheries Biodiversity Accounts: To organize and improve data on declining fish stocks and the implications for the country's export earnings and livelihoods of its people, to reverse the decline.

## **1.2** Summary of the Biodiversity and Tourism Accounts

The Biodiversity and Tourism Accounts are designed in an integrated way to provide a clear articulation of the status of natural capital assets underpinning Uganda's wildlife-watching tourism sub-sector, level of tourism activity in that sector and the level of associated expenditures.

The accounts have been compiled using the System of Environmental-Economic Accounting (SEEA) framework and with input from an Expert Working Group of national stakeholders to guide their development. The accounts produced aim to support UBoS on the National Plan for Advancing Environmental-Economic Accounting and other ministries, agencies and stakeholders in planning the development of the wildlife sector in Uganda.

Drawing on the accounting structures proposed in the SEEA Ecosystem Accounting framework (SEEA EA), this report presents a set of integrated ecosystem extent, species, physical and monetary ecosystem services accounts relevant to the wildlife-watching tourism account. These are supplemented with SNA Goods and Services Accounts, which link supply and use of the 'enabling tourism and recreation' ecosystem services to associated transactions of products and services recorded in the System of Nation Accounts. This reveal, more broadly, the magnitude and range of economic activity underpinned by Uganda's natural ecosystems and iconic species they contain.

The metadata report provides a description of data used and the data requirements to develop the Biodiversity and Tourism Accounts for Uganda. The meta-data will support coordinated efforts to establish regular data sharing, access and collection arrangements that support future compilations of the Biodiversity and Tourism Accounts.

#### 2.0 METADATA

The metadata is presented in two tables (Table 1 and Table 2). The first table covers the information used for the development of the account, while the second table covers the information for the future development of the accounts. The metadata table is a hybrid based on the standard format used by the Uganda Bureau of Statistics (UBOS) and extensions included as part of the Biodiversity and Tourism Accounts development.

The ten indicators developed in the accounts were

- 1. Key protected areas for wildlife watching tourism (used to establish the Ecosystem Accounting Areas to focus on)
- 2. Natural ecosystem extent and change (used in the Natural Ecosystem Extent Accounts)
- 3. Abundance of iconic species for wildlife watching tourism (used in the Thematic Species Accounts)
- 4. Number visits to UWA managed protected areas (used in Physical Ecosystem Service Supply and Use Accounts)
- 5. Number visits to NFA Central Forest Reserves (used in Physical Ecosystem Service Supply and Use Accounts)
- 6. Number visits to NFA Central Forest Reserves (used in Physical Ecosystem Service and Supply and Use Accounts)
- 7. Monetary value of visits to UWA managed protected areas (used in Monetary Ecosystem Service and the SNA Goods and Services Supply and Use Accounts)
- 8. Number visits to UWA managed protected areas by different types of tourist (used in Physical SNA Goods and Services Supply and Use Accounts)
- 9. Expenditure on activities at UWA managed protected areas (used in Monetary SNA Goods and Services Supply and Use Accounts)
- 10. Imputed expenditure by international tourist around UWA managed Protected Areas (used in Monetary SNA Goods and Services Supply and Use Accounts)

**Table 1: Metadata for Accounts development: Information used for Accounts Development** 

Thematic	information used for Accounts Development										
accounting area	Name of information /data indicator	Description of data/ information and standard classifications	Unit of measure -ment	Dis- aggregation	Compilation Practices	Sources of data (institution)	Computation Method	Accessibility and Availability of data	Frequency of production/ collection	Comments and limitations	Sources of Discrepancies between National and global figures
Biodiversity & Tourism (Ecosystem Accounting Areas)	Key protected areas for wildlife watching tourism	Spatial boundary of key protected areas as established national legislation.	N/A	N/A	Uganda has more than 700 protected areas. The selection of those most relevant to wildlife watching tourism was based on consultation with an Expert Working Group (EWG) and alignment with statistics on tourism activity	NEMA	GIS	The data is available through a formal request.	As required		None – these boundaries align with the World Database on protected Areas.
Biodiversity & Tourism (Natural Ecosystem Extent Accounts for Key Protected Areas)	Natural ecosystem extent and change	National Biomass Survey data. Physical data layered to include Uganda's 13 land cover/ land use (LUC) classes.	Hectares	1 ha	Pivot table creation for each Ecosystem Accounting Area. Natural ecosystem extent accounts have been compiled using the established NBS Land Cover Classes but aggregating	National Forestry Authority	Pivot tables have been calculated using the EnSym software modeling platform. This processing spatial data to a raster format at 1ha resolution. Land cover classes can then be aggregated using pivot tables (or directly from EnSym).	The data is available through a formal request.	Every five years, adjusted to every two years since 2017	It would be useful to generate these accounts going forward as part of the physical land asset accounting process.	Processing using the EnSym approach leads to some very minor discrepancies (<1%) with the approach employed for the national physical land asset accounts

Thematic					Information	used for	Accounts Deve	lopment			
accounting area	Name of information /data indicator	Description of data/ information and standard classifications	Unit of measure -ment	Dis- aggregation	Compilation Practices	Sources of data (institution)	Computation Method	Accessibility and Availability of data	Frequency of production/collection	Comments and limitations	Sources of Discrepancies between National and global figures
Biodiversity & Tourism (Thematic Species Accounts)	Abundance of iconic species for wildlife watching tourism	Animals counts for various years	No. of individu als for each species	By protected area	Data is based on animal surveys and census. Either on the ground or using aerial techniques.	UWA	Data is based on direct counts of species from multiple surveys conducted between 1980 and 2018	The data is published in the UWA State of Wildlife Resources Report and available through a formal request	Semi-regular	Standardised, regular species monitoring programmes would support future iterations of the accounts	N/A
Biodiversity & Tourism (Physical Ecosystem Services Supply and Use Accounts)	Number visits to UWA managed protected areas	These are the number of visitor days spent visiting the protected areas	Visitor days per year	By protected area	The data is based on direct counts of visitors entering national parks and wildlife reserves.	MTWA	The numbers are obtained via the gate registers as visitors enter the national parks and wildlife reserves and validated using gate receipts	The data is available through formal request and published annually in the MTWA Tourism Statistical Abstract	Annual	These statistics are already included in the national accounts prepared by UBoS	It is a proxy of the ecosystem service as other capital inputs contribute to motivating visits, for example, the facilities within the protected area and activities available.
	Number visits to NFA Central Forest Reserves	Tourist Numbers engaging in activities in NFA Central Forest reserves	No. Tourists engagin g in activities	By central forest reserve	These are data on activities engaged in by tourists visiting central forest reserves.	NFA	The data is assumed to represent visitor numbers (i.e., 1 tourist engages in a single activity during a visit).	The data is available through a formal request	Annual	This monitoring programme is just starting. There are many more visits to NFA sites that are unaccounted for. It is understood the monitoring programme will be more comprehensive in future years.	It is a proxy of the ecosystem service as other capital inputs contribute to making the activities available.

Thematic					Information	used for	Accounts Deve	lopment			
accounting area	Name of information /data indicator	Description of data/ information and standard classifications	Unit of measure -ment	Dis- aggregation	Compilation Practices	Sources of data (institution)	Computation Method	Accessibility and Availability of data	Frequency of production/collection	Comments and limitations	Sources of Discrepancies between National and global figures
Monetary Ecosystem Services Supply and Use Accounts	Monetary value of visits to UWA managed protected areas	Expenditure by tourists visiting UWA managed protected areas on entrance fees	Billions UgX/ year	By protected area	Using the information on physical visits and information on UWA Entrance Fee tariffs to national parks and wildlife reserves	UWA	The values are estimated using the data on physical visits to different protected areas by different tourist types multiplied by the relevant entrance fee tariffs	The gross entrance fee revenue data is available through a formal request UWA Tariffs for Entrance Fees and Activities are published bi- annually.	Annual	It has not been possible to separate children from adult visitors. It assumed all visitors are adults but this will lead to some overestimation of value. These could be adjusted using the information on actual gross entrance fee revenues available from UWA.	The use of entrance fees to value the ecosystem service grossly overestimates the value of the ecosystem service. To more accurately reflect the ecosystem service contribution to the visit the cost of other capital inputs needs to be removed (e.g., maintenance of visitor facilities and staff)
Biodiversity & Tourism (Physical SNA Goods and Services Supply and Use Accounts)	Number visits to UWA managed protected areas by different types of tourist	These are the number of visitor days for different types of tourists spent visiting the protected areas	Visitor days per year	By type of visitor (customer)	The data is based on direct counts of visitors entering national parks and wildlife reserves.	MTWA	The numbers are obtained via the gate registers as visitors enter the national parks and wildlife reserves and validated using gate receipts	The data is available through formal request and published annually in the MTWA Tourism Statistical Abstract	Annual	These statistics are already included in the national accounts prepared by UBoS	N/A

Thematic		Information used for Accounts Development										
accounting area	Name of information /data indicator	Description of data/ information and standard classifications	Unit of measure -ment	Dis- aggregation	Compilation Practices	Sources of data (institution)	Computation Method	Accessibility and Availability of data	Frequency of production/collection	Comments and limitations	Sources of Discrepancies between National and global figures	
Biodiversity & Tourism (Monetary SNA Goods and Services Supply and Use Accounts)	Monetary value of visits to UWA managed protected areas	Expenditure by tourists visiting UWA managed protected areas on entrance fees	Billions UgX/ year	By protected area	Using the information on physical visits and information on UWA Entrance Fee tariffs to national parks and wildlife reserves	UWA	The values are estimated using the data on physical visits to different protected areas by different tourist types multiplied by the relevant entrance fee tariffs	The gross entrance fee revenue data is available through a formal request  UWA Tariffs for Entrance Fees and Activities are published bi- annually.	Annual	None	N/A	
	Expenditure on activities at UWA managed protected areas	Expenditure by all tourists for vehicle entrance, gorilla tracking and other recreational activities (camping, nature hikes, chip tracking, boat/vehicle hire, ferry crossing). Expenditure on accommodation is excluded). Based on classifications routinely used by UWA.	Billions UgX / year	Disaggrega ted by: Vehicle entrance; Gorilla tracking; and, Other recreationa I activities (excluding accommod ation)  Data is not spatially disaggrega ted across protected areas	Collated by UWA from their income records	UWA	Information was extracted directly from data on revenue streams shared by UWA	The data is available through formal request	Annual	At this stage the data is not available disaggregated by tourist type or protected area.	N/A	
	Imputed expenditure by international tourist around UWA managed Protected Areas	Expenditure by international tourists associated with their visits to protected areas to engage in wildlife watching (e.g., accommodation, catering, retail, travel).  Based on classifications from Uganda's Tourism Expenditure	Billions UgX / year	Disaggrega ted by: Hotels, bars and restaurants; Retail trade; Travel services; Other services	Data on expenditure on Hotels, bars and restaurants; Retail trade; Travel services; Other services by international tourist was obtained directly from the Tourism Expenditure Motivation	MTWA with support from the World Bank	Average Daily expenditures were estimated from the TEMS 2012 and 2019 for different expenditure classes.  Total expenditure for each class was calculated by multiplying average daily expenditure by physical data on	This data is published	To date the TEMS has been administered in 2012 and 2019	The TEMS only allows these expenditures to be imputed for international tourists. It has not been possible to input these expenditures for EAC visitors.	N/A	

Thematic					Information	used for	Accounts Deve	lopment			
accounting area	Name of information	Description of data/ information and	Unit of measure	Dis- aggregation	Compilation Practices	Sources of data	•	Accessibility and Availability of data	Frequency of production/	Comments and limitations	Sources of Discrepancies
	/data indicator	standard classifications	-ment	agg. egane	- Fucuses	(institution)	carca	Transcently or data	collection		between National and global figures
		Motivation Surveys (TEMS).  Expenditure on cultural and recreational services is excluded to avoid double-counting concerning the UWA Activities International Tourist Consume.		Data is not spatially disaggrega ted across protected areas	Surveys (TEMS) from 2012 and 2019.		visits by international tourists regularly published by the MTWA.  This is considered a conservative assumption, given the time tourists will spend time travelling to and from the park, as well as within it.				

Table 2: Metadata for Accounts development: Information to support future accounts production

Thematic accounting	Name of information	How is the indicator used	Data format	Identify any documented data	Sources of data	Identify if institutional	Are institutional arrangements for	Does an MoU need to be established to	What acknowledgme	Foot	notes
area	/data indicator	in the project? (document which account and any further processing required)		quality assurance procedures or validation against other sources	(institution and designation of data compiler)	mandate and funding exist for continued future production.	accessing and using the data sharing established and adequate (as described in the Accessibility and Availability of Data' column?	access data? If so, describe the procedure to establish this.	nts and references need to be made when using the data?	Contact point 1 (name and contact details)	Contact point 2 (name and contact details)
Biodiversity & Tourism (Ecosystem Accounting Areas)	Key protected areas for wildlife watching tourism	Provides a spatial boundary for compiling ecosystem accounts for areas relevant to the wildlife watching tourism subsector	ESRI Shapefile	TBC	NEMA	NEMA has the mandate for reporting on the State of the Environment. Maintaining spatial data on protected area boundaries is essential for this task.	Yes	No	NEMA.	Julius Muyizzi, NEMA (julius.muyizzi@ nema.go.ug)	Sarah Tumuhairwe, NEMA (sarah.tumuhair we@nema.go.ug )
Biodiversity & Tourism (Natural Ecosystem Extent Accounts for Key Protected Areas)	Natural ecosystem extent)	The indicator was used to develop the natural ecosystem extent accounts for protected areas.	GeoTIFF	FAO External data validation support	National Forestry Authority	The NFA has the mandate for the production of land cover and land use maps in Uganda	Yes	There are established government sharing platforms between Ministries, Departments and Agencies and the Uganda Bureau of Statistics (UBOS),	National Forestry Authority, and/or Uganda Bureau of Statistics if statistics have been produced already.	John Diisi, NFA (johndiisi@gmail .com; johnd@nfa.org.u g)	Edward Ssenyonjo, NFA (senyonjo.edwar d@gmail.com; edwards@nfa.or g.ug)
Biodiversity & Tourism (Thematic Species Accounts)	Abundance of iconic species for wildlife watching tourism	The indicator was used in the Species accounts to reveal trends in iconic species populations that support wildlife watching tourism in protected areas.	PDF	Unknown	UWA	UWA indicate this the State of Wildlife Resources report presenting these data will be updated every 2 years	Yes	No	UWA	Fred Kisame, UWA (fred.kisame@ya hoo.com)	Fred Wanyama, UWA (fred.wanyama@ wildlife.go.ug)

Thematic accounting	Name of information	How is the indicator used	Data format	Identify any documented data	Sources of data	Identify if institutional	Are institutional arrangements for	Does an MoU need to be established to	What acknowledgme	Foot	notes
area	/data indicator	in the project? (document which account and any further processing required)		quality assurance procedures or validation against other sources	(institution and designation of data compiler)	mandate and funding exist for continued future production.	accessing and using the data sharing established and adequate (as described in the Accessibility and Availability of Data' column?	access data? If so, describe the procedure to establish this.	nts and references need to be made when using the data?	Contact point 1 (name and contact details)	Contact point 2 (name and contact details)
Biodiversity & Tourism (Physical Ecosystem Services Supply and Use Accounts)	Number visits to UWA managed protected areas	The indicator was used to develop the physical ecosystem services supply and use accounts. It provides a proxy for the 'enabling recreation and tourism' ecosystem service.	PDF	MTWA Statistical Data Quality assurance	MTWA & UWA	MTWA produce and publish these statistics on annual basis for a number of years now.	Yes	No – they are part of the established statistical reporting process.	MTWA / UWA	Leone Candia, MTWA (candia.leone@g mail.com)	Fred Wanyama, UWA (fred.wanyama@ wildlife.go.ug)
	Number visits to NFA Central Forest Reserves	The indicator was used to develop the physical ecosystem services supply and use accounts. It provides a proxy for the 'enabling recreation and tourism' ecosystem service.	Excel	Under development	NFA	It is understood NFA are allocating more resources to future marketing and monitoring of ecotourism	Through formal request, these data can be obtained	Through formal request, these data can be obtained	NFA	Sylvia Tumusiime, NFA (sylvia.tumusiime @nfa.go.ug)	Kabi Maxwell (NFA, Maxkabi@nfa.or g.ug)
Biodiversity & Tourism (Monetary Ecosystem Services Supply and	Monetary value of visits to UWA managed protected	The indicator was used to develop the monetary ecosystem services supply	PDF	The indicator is calculated by multiplying published entrance fees with physical data on visits from	MTWA & UWA	MTWA produce and publish physical statistics on annual basis for several years now.	The gross entrance fee revenue data is available through the formal request	The gross entrance fee revenue data is available through the formal request	UWA & MTWA	Fred Wanyama, UWA (fred.wanyama@ wildlife.go.ug)	Denis Rodney Ojok, MTWA (dojok@tourism. go.ug)
Use Accounts)	areas	and use accounts.  Technically it should be adjusted to take account of other capital inputs required to		the same source used to calculate the "Number visits to UWA managed protected areas"		UWA publishes entrance fee tariffs every 2 years	The indicator can be calculated for national parks using the regularly published visitor and tariff data				

Thematic accounting	Name of information	How is the indicator used	Data format	Identify any documented data	Sources of data	Identify if institutional	Are institutional arrangements for	Does an MoU need to be established to	What acknowledgme	Foot	notes
area	/data indicator	in the project? (document which account and any further processing required)		quality assurance procedures or validation against other sources	(institution and designation of data compiler)	mandate and funding exist for continued future production.	accessing and using the data sharing established and adequate (as described in the Accessibility and Availability of Data' column?	access data? If so, describe the procedure to establish this.	nts and references need to be made when using the data?	Contact point 1 (name and contact details)	Contact point 2 (name and contact details)
		facilitate tourist visits (e.g., using resource ret of residuals approaches)									
Biodiversity & Tourism (Physical SNA Goods and Services Supply and Use Accounts)	Number visits to UWA managed protected areas by different types of tourist	The indicator was used to develop the physical SNA Goods and Services supply and use accounts. It reveals the economic good that UWA sells to different customers from using the enabling recreation and tourism' ecosystem service.	PDF	MTWA Statistical Data Quality assurance	MTWA & UWA	MTWA produce and publish these statistics on annual basis for several years now.	Yes	No – they are part of the established statistical reporting process.	MTWA / UWA	Denis Rodney Ojok, MTWA (dojok@tourism. go.ug)	Fred Wanyama, UWA (fred.wanyama@ wildlife.go.ug)

Thematic accounting	Name of information	How is the indicator used	Data format	Identify any documented data	Sources of data	Identify if institutional	Are institutional arrangements for	Does an MoU need to be established to	What acknowledgme	Foot	notes
area	/data indicator	in the project? (document which account and any further processing required)		quality assurance procedures or validation against other sources	(institution and designation of data compiler)	mandate and funding exist for continued future production.	accessing and using the data sharing established and adequate (as described in the Accessibility and Availability of Data' column?	access data? If so, describe the procedure to establish this.	nts and references need to be made when using the data?	Contact point 1 (name and contact details)	Contact point 2 (name and contact details)
Biodiversity & Tourism (Monetary SNA Goods and Services Supply and Use Accounts)	Monetary value of visits to UWA managed protected areas	The indicator was used to develop the Monetary SNA Goods and Services supply and use accounts. It contributes to revealing the full range of economic activity underpinned by the ecosystems and species in the selected protected areas. In this case monetary value UWA generates selling access to the enabling recreation and tourism ecosystem service	PDF	MTWA Statistical Data Quality assurance	MTWA & UWA	MTWA produce and publish these statistics on annual basis for several years now.	Yes	No – they are part of the established statistical reporting process.	MTWA / UWA	Denis Rodney Ojok, MTWA (dojok@tourism. go.ug)	Fred Wanyama, UWA (fred.wanyama@ wildlife.go.ug)

Thematic accounting	Name of information	How is the indicator used	Data format	Identify any documented data	Sources of data	Identify if institutional	Are institutional arrangements for	Does an MoU need to be established to	What acknowledgme	Foot	notes
area	/data indicator	in the project? (document which account and any further processing required)		quality assurance procedures or validation against other sources	(institution and designation of data compiler)	mandate and funding exist for continued future production.	accessing and using the data sharing established and adequate (as described in the Accessibility and Availability of Data' column?	access data? If so, describe the procedure to establish this.	nts and references need to be made when using the data?	Contact point 1 (name and contact details)	Contact point 2 (name and contact details)
	Expenditure on activities at UWA managed protected areas	The indicator was used to develop the Monetary SNA Goods and Services supply and use accounts and revealing the full range of economic activity in the selected protected areas. In this case, the monetary value UWA generates selling activities underpinned by the enabling recreation and tourism ecosystem service.  Specifically: Vehicle entrance; Gorilla tracking; and, Other recreational activities (excluding accommodation)	Excel	Unknown	UWA	This is part of UWA and MTWA necessary business activity	Through formal request, these data can be obtained	Through formal request, these data can be obtained	UWA & MTWA	Fred Wanyama, UWA (fred.wanyama@ wildlife.go.ug)	Denis Rodney Ojok, MTWA (dojok@tourism. go.ug)





 $\boldsymbol{\mathsf{A}}$  metadatabase for the biodiversity and tourism accounts for Uganda