



Convention on
Biological Diversity



Aichi Biodiversity Target 11 Country Dossier: UGANDA

With generous support from:



DEUTSCHE ZUSAMMENARBEIT

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



UK Government



WCMC



Global Partnership on
AICHI TARGET 11



TABLE OF CONTENTS

GLOSSARY	3
EXECUTIVE SUMMARY	5
<i>Aichi Biodiversity Target 11 Elements: Current status and opportunities for action</i>	5
INTRODUCTION	8
SECTION I: CURRENT STATUS	10
<i>COVERAGE</i>	11
<i>ECOLOGICAL REPRESENTATIVENESS</i>	13
<i>AREAS IMPORTANT FOR BIODIVERSITY</i>	15
<i>AREAS IMPORTANT FOR ECOSYSTEM SERVICES</i>	19
<i>CONNECTIVITY & INTEGRATION</i>	22
<i>GOVERNANCE DIVERSITY</i>	23
<i>PROTECTED AREA MANAGEMENT EFFECTIVENESS</i>	26
SECTION II: EXISTING PROTECTED AREA AND OECM COMMITMENTS	28
<i>PRIORITY ACTIONS FROM 2015-2016 REGIONAL WORKSHOPS</i>	28
<i>NATIONAL BIODIVERSITY STRATEGY AND ACTION PLANS (NBSAPs)</i>	30
<i>APPROVED GEF-5, GEF-6, & GCF PROTECTED AREA PROJECTS</i>	31
<i>OTHER ACTIONS/COMMITMENTS</i>	32
ANNEX I	35
<i>FULL LIST OF ECOREGIONS</i>	35
REFERENCES	36



GLOSSARY

AZEs	Alliance for Zero Extinction sites
CEPF	Critical Ecosystem Partnership Fund
EEZ	Exclusive Economic Zone
GCF	Green Climate Fund
GD-PAME	Global Database on Protected Area Management Effectiveness
GEF	Global Environment Facility
IBA	Important Bird and Biodiversity Area
ICCAs	Indigenous and Community Conserved Area Area (may also be referred to as territories and areas conserved by Indigenous peoples and local communities or “territories of life”)
IPLC	Indigenous Peoples and Local Communities
KBA	Key Biodiversity Area
NBSAP	National Biodiversity Strategy and Action Plan
OECM	Other Effective Area-Based Conservation Measures
PA	Protected Area
PAME	Protected Area Management Effectiveness
PPA	Privately Protected Area
ProtConn	Protected Connected land indicator
SOC	Soil Organic Carbon
TEOW	Terrestrial Ecosystems of the World
WDPA	World Database on Protected Areas
WD-OECM	World Database on Other Effective Area-Based Conservation Measures



Disclaimer

The designations employed and the presentation of material in this dossier do not imply the expression of any opinion whatsoever on the part of the Secretariat of the Convention on Biological Diversity (SCBD) or United Nations Development Programme (UNDP) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The information contained in this publication do not necessarily represent those of the SCBD or UNDP.

This country dossier is compiled by the UNDP and SCBD from publicly available information. It is prepared, within the overall work of the Global Partnership on Aichi Biodiversity Target 11, for the purpose of attracting the attention of the Party concerned and other national stakeholders to facilitate the verification, correcting, and updating of country data. The statistics might differ from those reported officially by the country due to differences in methodologies and datasets used to assess protected area coverage and differences in the base maps used to measure terrestrial and marine area of a country or territory. Furthermore, the suggestions from the UNDP and SCBD are based on analyses of global datasets, which may not necessarily be representative of national policy or criteria used at the national level. The analyses are also subject to the limits inherent in global indicators (precision, reliability, underlying assumptions, etc.). Therefore, they provide useful information but cannot replace analyses at a national level nor constitute a future benchmark for national policy or decision-making.

The preparation of this dossier was generously supported by: the Government of the Federal Republic of Germany, *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH*; the European Commission; the Government of the United Kingdom of Great Britain and Northern Ireland; and the Government of Japan (Japan Biodiversity Fund). The dossier does not necessarily reflect their views.

This publication may be reproduced for educational or non-commercial purposes without special permission from the copyright holders, provided acknowledgement of the source is made. The SCBD and UNDP would appreciate receiving a copy of any publications that use this document as a source.



EXECUTIVE SUMMARY

This document provides information on the coverage of protected areas (PAs) and other effective area-based conservation measures (OECMs), as currently reported in global databases (the World Database on Protected Areas (WDPA) and World Database on Other Effective Area-Based Conservation Measures (WD-OECM)). It also includes details on the status of the other qualifying elements of Aichi Biodiversity Target 11 based on this data. This dossier also provides a summary of commitments made under Aichi Biodiversity Target 11, and a summary of opportunities regarding elements of the target for future planning.

The dossier has been developed in consultation with the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), which manages the WDPA, WD-OECM and Global Database on Protected Area Management Effectiveness (GD-PAME). Parties to the CBD are requested to contact protectedareas@unep-wcmc.org with any updates to the information in these databases.

Aichi Biodiversity Target 11 Elements: Current status and opportunities for action

Coverage

- **Status:** as of May 2021, terrestrial coverage in Uganda is 39,053.5 km² (16.1%).
- **Opportunities for action:** opportunities for the near-term include updating the WDPA with any unreported PAs. In the future, focus on relatively intact areas, while addressing the elements in the following sections, could be considered when planning new PAs or OECMs. Uganda has identified several actions that need to be undertaken to advance recognition and reporting of OECMs, including: developing guidelines and up-scaling Payment for Ecosystem Services (PES); developing and piloting guidelines on biodiversity offsets; enhancing Mitigation of Human-Wildlife conflicts; and improving support for alternative livelihood options for local communities adjacent to PAs.

Ecological Representativeness

- **Status:** Uganda contains 8 terrestrial ecoregions: the mean coverage by reported PAs and OECMs is 51.6%; all terrestrial ecoregions have at least 10% coverage by reported PAs and OECMs.
- **Opportunities for action:** there is opportunity for Uganda to increase protection in ecoregions that have lower levels of coverage by PAs or OECMs, and to focus on effective management for those that already have higher coverage.

Areas Important for Biodiversity

- **Status:** Uganda has 50 Key Biodiversity Areas (KBAs): the mean protected coverage of KBAs by reported PAs and OECMs is 68.5%, while 7 KBAs have no coverage by reported PAs and OECMs.



6 | Aichi Biodiversity Target 11 Country Dossier: UGANDA

- **Opportunities for action:** there is opportunity for Uganda to increase protection of KBAs that have lower levels of coverage by PAs and OECMs; priority could be given to those with no current coverage.

Areas Important for Ecosystem Services

- **Status:** coverage of areas important for ecosystem services: In Uganda, 27.7% of aboveground biomass carbon, 29.2% of belowground biomass carbon and 19.7% of soil organic carbon is covered by PAs and OECMs.
- **Opportunities for action:** for carbon, there is opportunity for Uganda to increase PA and OECM coverage in terrestrial areas with high carbon stocks. Protecting areas with high carbon stocks secures the benefits of carbon sequestration in the area.
- For water, there is opportunity to increase the area of the water catchment under protection by PAs and OECMs, or in cases where there is high levels of protection, focus on effective management for these areas. Protecting the current area of forested land and potentially reforesting would have benefits for improving water security.

Connectivity and Integration

- **Status:** coverage of protected-connected lands is 6.4%.
- **Opportunities for action:** there is opportunity for the targeted designation of PAs or OECMs in strategic locations for connectivity, and to focus on PA and OECM management for enhancing and maintaining connectivity. Improving connectivity increases the effectiveness of PAs and OECMs and reduces the impacts of fragmentation.
- As well, a range of suggested steps for enhancing and supporting integration are included in the voluntary guidance on the integration of PAs and OECMs into the wider land- and seascapes and mainstreaming across sectors to contribute, inter alia, to the SDGs (Annex I of COP Decision 14/8).

Governance Diversity

- **Status:** the most common governance type(s) for reported PAs in Uganda is: 98.2% under Government (97.7% Federal or national ministry or agency; 0.4% Government-delegated management).
- **Opportunities for action:** explore opportunities for governance types that have lower representation, for Uganda this relates to governance by Indigenous Peoples and/or local communities (IPLC), private governance, and shared governance.
- There is also opportunity for Uganda to complete governance and equity assessments, to establish baselines and identify relevant actions for improvement. As well, a range of suggested actions are included in the voluntary guidance on effective governance models for management of protected areas, including equity (Annex II of COP Decision 14/8).



Protected Area Management Effectiveness

- **Status:** 41.0% of terrestrial PAs have completed Protected Area Management Effectiveness (PAME) assessments reported.
- **Opportunities for action:** the 60% target for completed management effectiveness assessments (per COP Decision X/31) **has not** been met for terrestrial PAs, therefore, there is opportunity to increase protected area management effectiveness (PAME) evaluations for terrestrial PAs to achieve the target.
- There is also opportunity to implement the results of completed PAME evaluations, to improve the quality of management for existing PAs and OECMs (e.g. through adaptive management and information sharing, increasing the number of sites reporting 'sound management') and to increase reporting of biodiversity outcomes in PAs and OECMs.



INTRODUCTION

The Strategic Plan for Biodiversity 2011-2020 was adopted at the tenth meeting of the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) held in Nagoya, Aichi Prefecture, Japan from 18-29 October 2010. The vision of the Strategic Plan is one of “Living in harmony with nature” where *“By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people”* (CBD, 2010). In addition to this vision, the Strategic Plan is composed of 20 targets, under five strategic goals. Aichi Biodiversity Target 11 states that *“By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.”*

With the conclusion of the Aichi Biodiversity Targets in 2020, Target 11 on area-based conservation has seen success in the expansion of the global network of protected areas (PA) and other effective area-based conservation measures (OECMs). The negotiation of the post-2020 Global Biodiversity Framework (GBF) and its future targets provide an essential opportunity to further improve the coverage of PAs and OECMs, to improve other aspects of area-based conservation, to accelerate progress on biodiversity conservation more broadly, while also addressing climate change, and the Sustainable Development Goals. This next set of global biodiversity targets are to be adopted at the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity. These new targets must aim to build upon lessons learned from the last decade of progress to deliver transformative change for the benefit of nature and people, to realize the 2050 Vision for biodiversity.

The United Nations Development Programme (UNDP) and the Secretariat of the Convention on Biological Diversity have developed the Aichi Biodiversity Target 11 Country Dossiers, which provide countries with an overview of the status of Target 11 elements, opportunities for action, and a summary of commitments made by Parties over the last decade. Each dossier can support countries in assessing their progress on key elements of Aichi Biodiversity Target 11 and identifying opportunities to prioritize new protected areas and OECMs.

This dossier provides an overview of area-based conservation

in Uganda. Section I of the dossier presents data on the current status of Uganda’s PAs and OECMs. The data presented in Section I relates to each element of Target 11. Section I also presents the PA and OECM coverage for two critical ecosystem services: water security and carbon stocks. In addition, the dossier presents potential opportunities for action for Uganda, in relation to each Target 11 element. The analyses present options for improving Uganda’s area-based conservation network to achieve enhanced protection and benefits for livelihoods and climate change. Section II presents details on Uganda’s existing PA and OECMs commitments as a summary of existing efforts towards achieving Target 11. This

9 | Aichi Biodiversity Target 11 Country Dossier: UGANDA

gives focus not only to national policy and actions but also voluntary commitments to the UN. Furthermore, where data is available, this dossier provides information on potential OECMs, Indigenous and Community Conserved Areas (ICCAs; also often referred to as territories and areas conserved by Indigenous peoples and local communities or “territories of life”) and Privately Protected Areas (PPAs) and the potential contribution they will have in achieving the post-2020 targets.

The information on PAs and OECMs presented here is derived from the World Database on Protected Areas (WDPA) and World Database on Other Effective Area-Based Conservation Measures (WD-OECM). These databases are joint products of UNEP and IUCN, managed by UNEP-WCMC, and can be viewed and downloaded at www.protectedplanet.net. Parties are encouraged to provide data on their PAs and OECMs to UNEP-WCMC for incorporation into the databases (see e.g. Decisions 10/31 and 14/8). The significant efforts of Parties in updating their data in the build up to the publication of the Protected Planet Report 2020 (UNEP-WCMC and IUCN, 2021) were greatly appreciated. UNEP-WCMC welcomes further updates, following the data standards described here (www.wcmc.io/WDPA_Manual), and these should be directed to protectedareas@unep-wcmc.org. The statistics presented in this dossier are derived from the May 2021 WDPA and WD-OECM releases, unless explicitly stated otherwise. Readers should consult www.protectedplanet.net for the latest coverage statistics (updated monthly).

Some data from the WDPA and WD-OECM are not made publicly available at the request of the data-provider. This affects some statistics, maps, and figures presented in this dossier. Statistics provided by UNEP-WCMC (terrestrial and marine coverage) are based upon the full dataset, including restricted data. All other statistics, maps, and figures are based upon the subset of the data that is publicly available.

Where data is less readily available, such as for potential OECMs, ICCAs and PPAs, data has also been compiled from published reports and scientific literature to provide greater awareness of these less commonly recorded aspects. These data are provided to highlight the need for comprehensive reporting on these areas to the WDPA and/or WD-OECM. Parties are invited to work with indigenous peoples, local communities and private actors to submit data under the governance of these actors, with their consent, to the WDPA and/or WD-OECM.

Overall, PAs and OECMs are essential instruments for biodiversity conservation and to sustain essential ecosystem services that support human well-being and sustainable development, including food, medicine, and water security, as well as climate change mitigation and adaptation and disaster risk reduction. The data in this dossier, therefore, aims to celebrate the current contributions of PAs and OECMs, whilst the gaps presented hope to encourage greater progress, not just for the benefit of biodiversity and the post-2020 GBF, but also to recognize the essential role of PAs and OECMs to the Sustainable Development Goals and for addressing the climate crisis.



SECTION I: CURRENT STATUS

Aichi Biodiversity Target 11 refers to both protected areas (PAs) and other effective area-based conservation measures (OECMs). This section provides the current status for all elements of Aichi Biodiversity Target 11 where indicators with global data are available. Statistics for all elements are presented using data on both PAs and OECMs (where this data is available and reported in global databases like the WDPA and WD-OECM). It is recognized that statistics reported in the WPDA and WD-OECM might differ from those reported officially by countries due to differences in methodologies and datasets used to assess protected area coverage and differences in the base maps used to measure terrestrial and marine area of a country or territory. Details on UNEP-WCMC's methods for calculating PA and OECM coverage area available [here](#). The global indicators adopted here for presenting the status of other elements of Target 11 may also differ from those in use nationally. Where available, results from national reporting are also included.



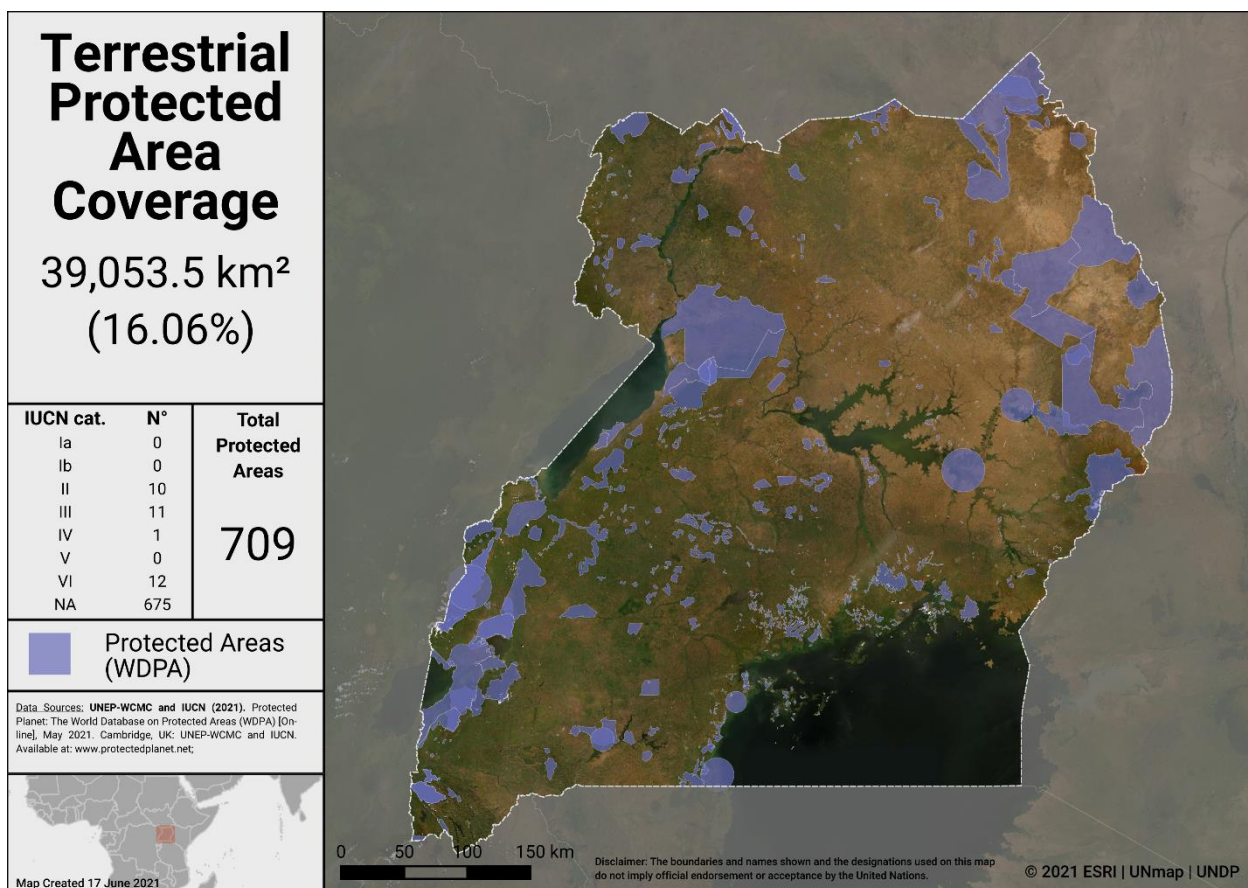
COVERAGE

As of May 2021, Uganda has **711** protected areas reported in the World Database on Protected Areas (WDPA). 2 UNESCO-MAB Biosphere Reserves are not included in the following statistics (see details on UNWP-WCMC’s methods for calculating PA and OECM coverage [here](#)).

As of May 2021, Uganda has **0** OECMs reported in the WD-OECM.

Current coverage for Uganda:

- 16.1% terrestrial (709 protected areas, 39,053.5 km²)



Terrestrial Protected Areas in Uganda

Potential OECMs

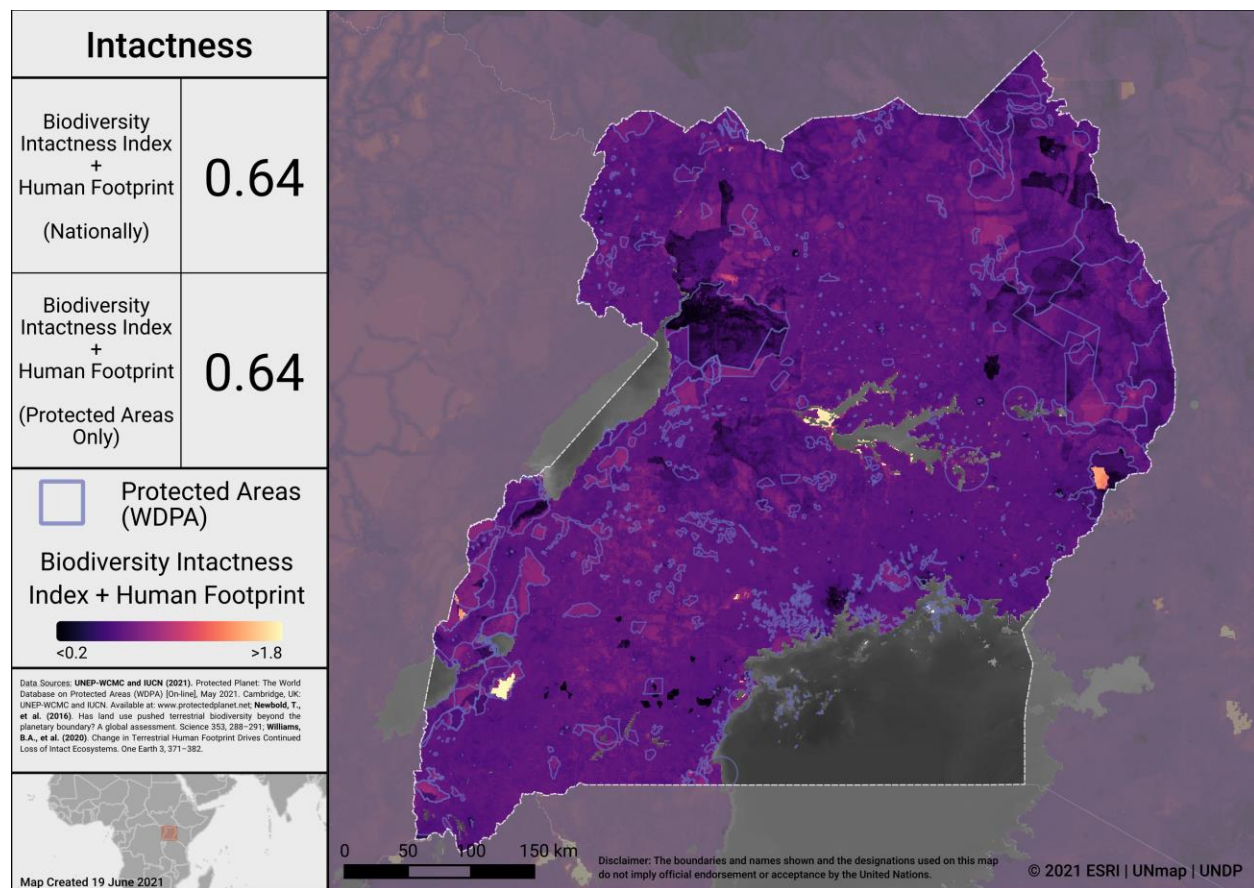
Uganda has potential for OECMs if the following actions are undertaken:

- Developing guidelines and up-scaling Payment for Ecosystem Services (PES)
- Developing and piloting guidelines on biodiversity offsets
- Enhancing Mitigation of Human-Wildlife conflicts
- Improving support for alternative livelihood options for local communities adjacent to PAs.

12 | Aichi Biodiversity Target 11 Country Dossier: UGANDA

Opportunities for action

Opportunities for the near-term include updating the WDPA with any unreported PAs. Uganda has identified a range of actions necessary to advance the recognition and reporting of OECMs (see above). In the future, as Uganda considers where to add new PAs and OECMs, the map below identifies areas in Uganda where intact areas are not currently protected. Focus on relatively intact areas, while addressing the elements in the following sections, could be considered when planning new PAs or OECMs.



Intactness in Uganda

To explore more on intactness visit the UN Biodiversity Lab: map.unbiodiversitylab.org.

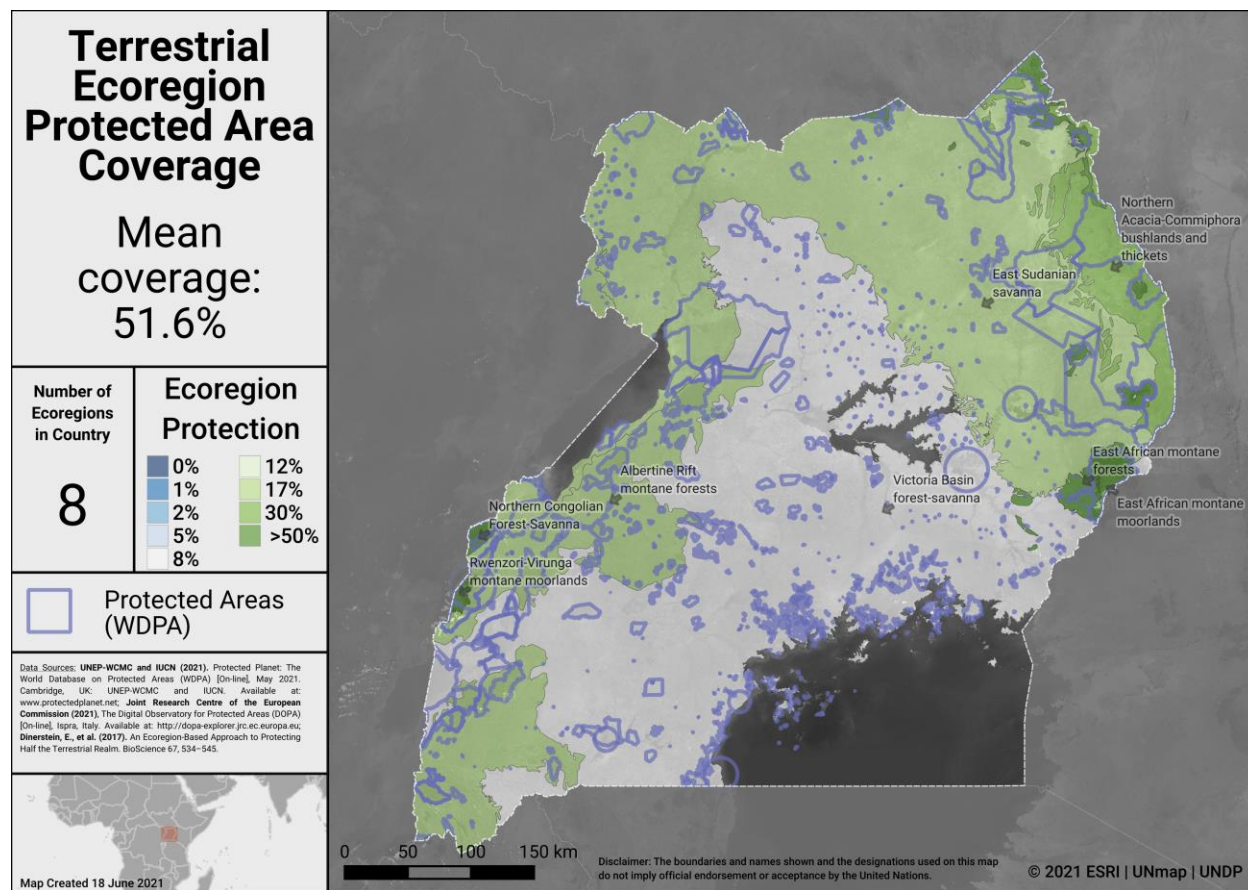
ECOLOGICAL REPRESENTATIVENESS

Ecological representativeness is assessed based on the PAs and OECMs coverage of broad-scale biogeographic units. Globally, ecoregions have been described for terrestrial areas (Dinerstein et al, 2017), marine coastal and shelf ecosystems (to a depth of 200m; Spalding et al 2007) and surface pelagic waters (Spalding et al 2012).

Uganda has 8 **terrestrial** ecoregions. Out of these:

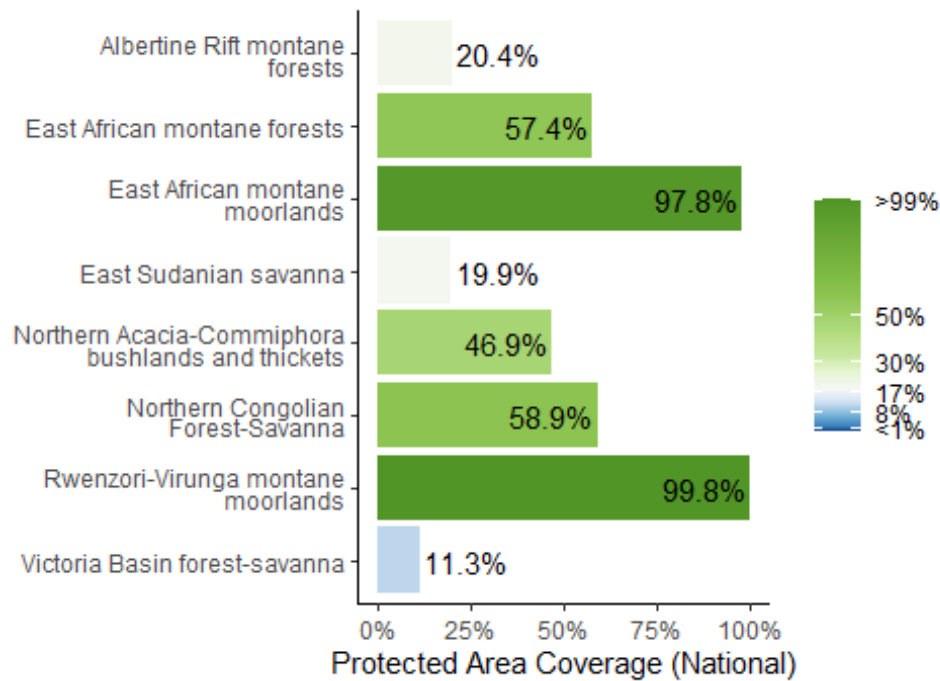
- All 8 ecoregions have at least some coverage from PAs and OECMs.
- 7 ecoregions have at least 17% protected within the country.
- The average terrestrial coverage of ecoregions is 51.6%.

A full list of ecoregions in Uganda is available in Annex I.



Terrestrial ecoregions in Uganda

14 | Aichi Biodiversity Target 11 Country Dossier: UGANDA



Terrestrial ecoregions of the World (TEOW) in Uganda

Opportunities for action

There is opportunity for Uganda to increase protection in ecoregions that have lower levels of coverage by PAs or OECMs, and to focus on effective management for those that already have higher coverage.

AREAS IMPORTANT FOR BIODIVERSITY

Key Biodiversity Areas (KBAs)

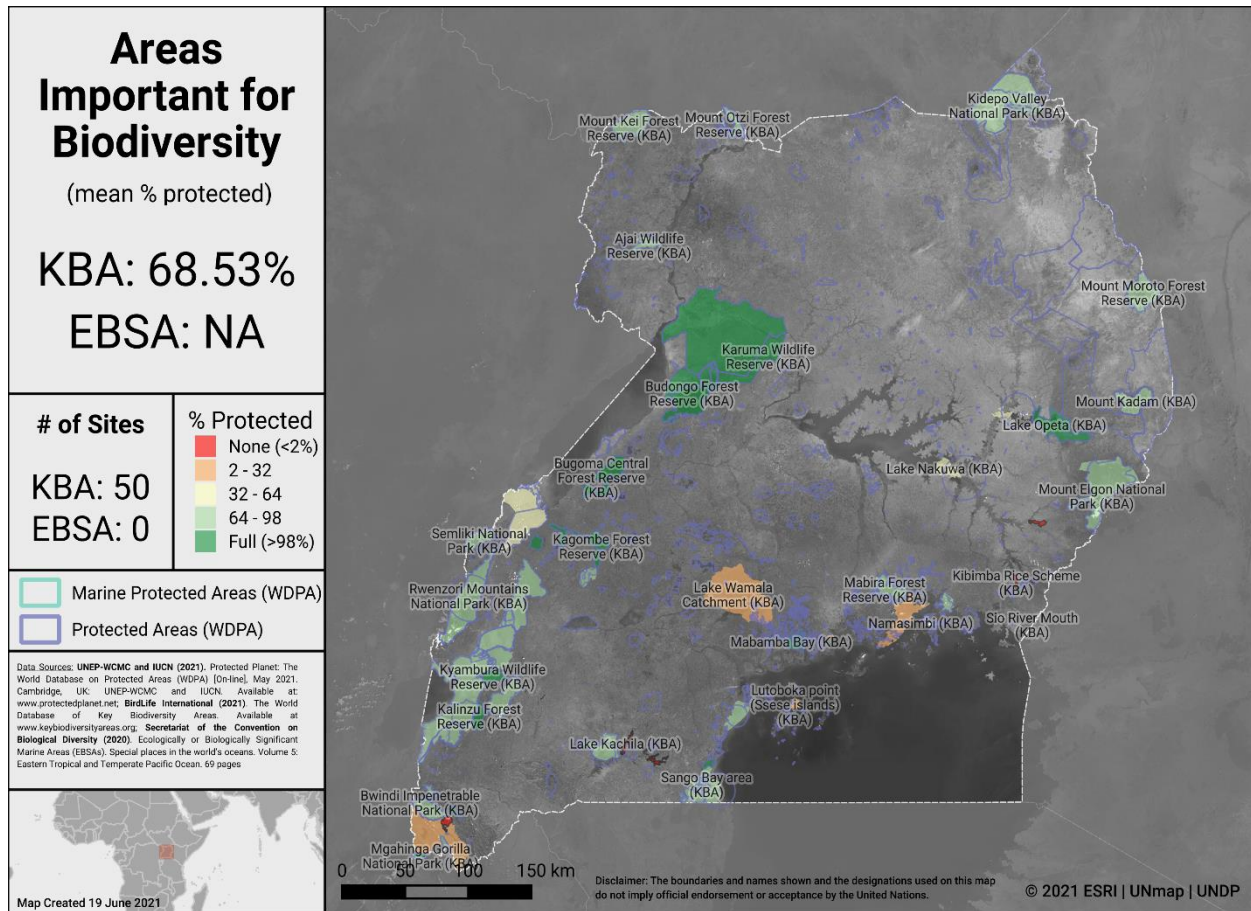
Protected area and OECM coverage of Key Biodiversity Areas (KBAs) provide one proxy for assessing the conservation of areas important for biodiversity at national, regional and global scales. KBAs are sites that make significant contributions to the global persistence of biodiversity (IUCN, 2016). The KBA concept builds on four decades of efforts to identify important sites for biodiversity, including Important Bird and Biodiversity Areas, Alliance for Zero Extinction sites, and KBAs identified through Hotspot ecosystem profiles supported by the Critical Ecosystem Partnership Fund. Incorporating these sites, the dataset of internationally significant KBAs includes Global KBAs (sites shown to meet one or more of 11 criteria in the Global Standard for the Identification of KBAs, clustered into five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and irreplaceability), Regional KBAs (sites identified using pre-existing criteria and thresholds, that do not meet the Global KBA criteria based on existing information), and KBAs whose Global/Regional status is Not yet determined, but which will be assessed against the global KBA criteria within 8-12 years. Regional KBAs are often of critical international policy relevance (e.g., in EU legislation and under the Ramsar Convention on Wetlands), and many are likely to qualify as Global KBAs in future once assessed for their biodiversity importance for other taxonomic groups and ecosystems. To date, nearly 16,000 KBAs have identified globally, and information on each of these is presented in the World Database of Key Biodiversity Areas: www.keybiodiversityareas.org.

Uganda has **50** Key Biodiversity Areas (KBAs).

- Mean percent coverage of all KBAs by PAs and OECMs in Uganda is **68.5%**.
- **14** KBAs have full (>98%) coverage by PAs and OECMs.
- **29** KBAs have partial coverage by PAs and OECMs.
- **7** KBAs have no (<2%) coverage by PAs and OECMs.

This country has established a Key Biodiversity Area (KBA) National Coordination Group which brings together a wide range of stakeholders, from government agencies, NGOs, academia and wider society. The group oversees and coordinates the identification, delineation, monitoring and promotion of conservation of KBAs, and is currently undertaking a national assessment of KBAs across all taxonomic groups and ecosystems for which data exist, building on the existing network of KBAs in the country.

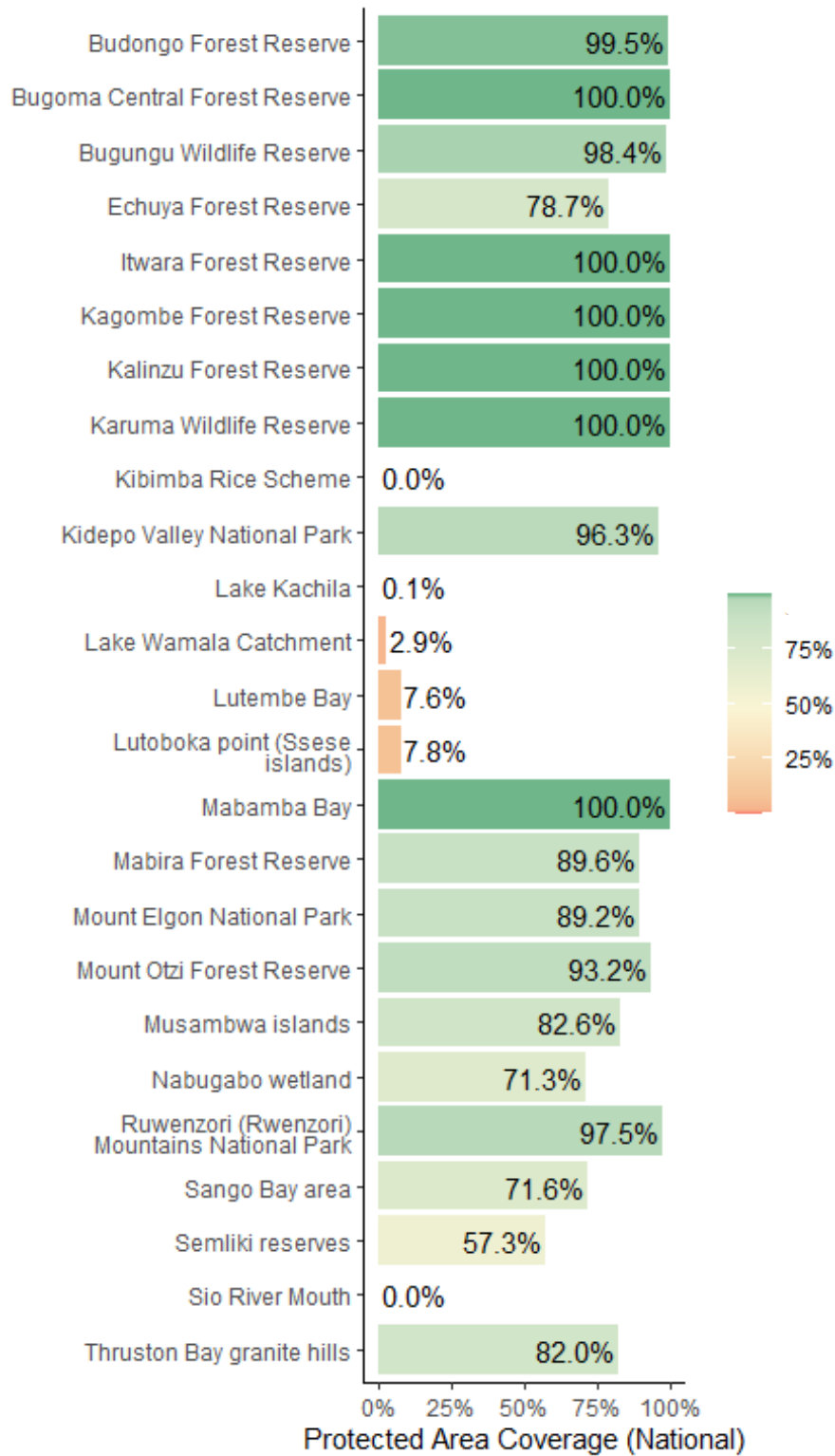




Areas Important for Biodiversity in Uganda



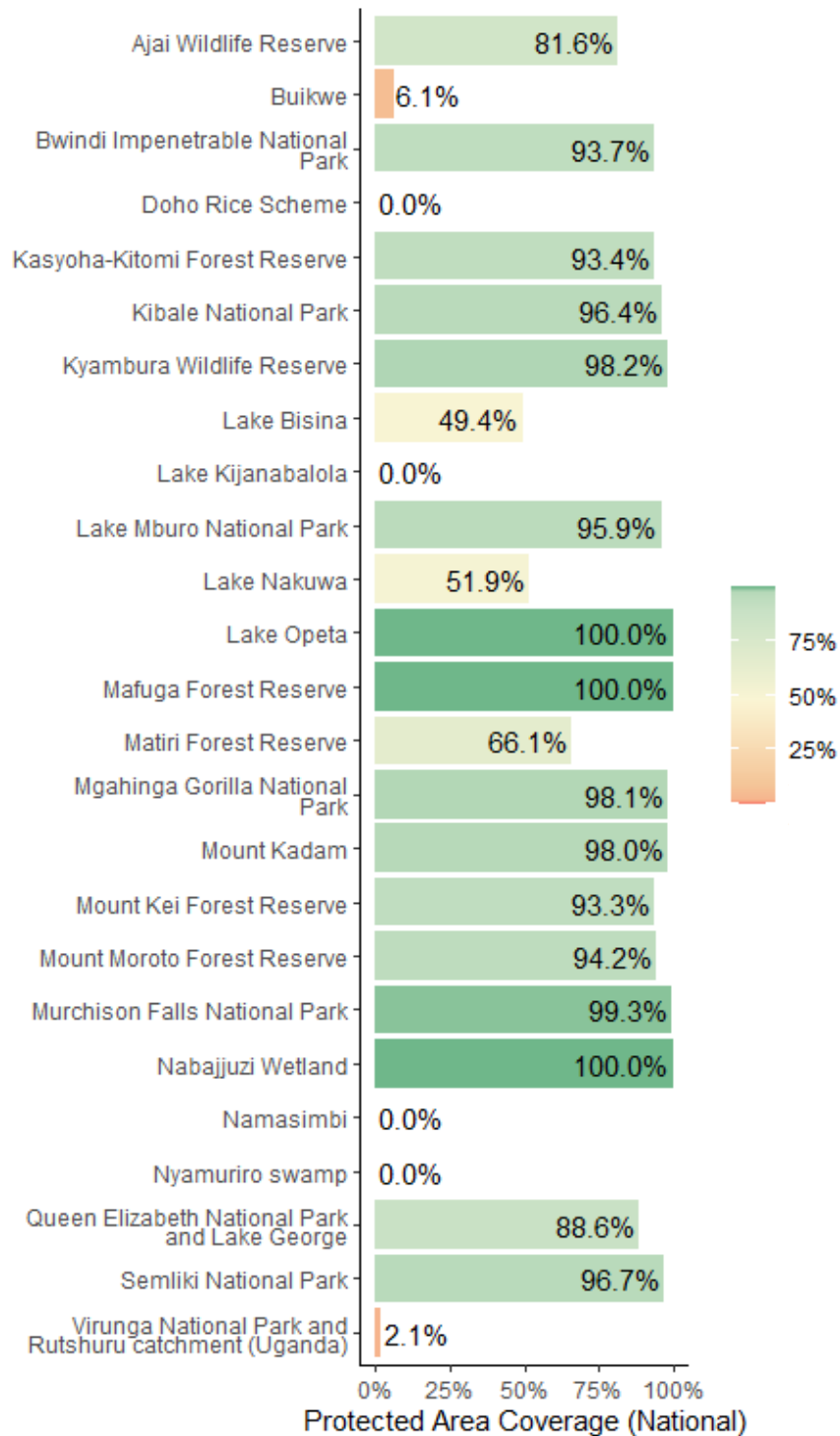
17 | Aichi Biodiversity Target 11 Country Dossier: UGANDA



Key Biodiversity Area Coverage (KBA) in Uganda



18 | Aichi Biodiversity Target 11 Country Dossier: UGANDA



Key Biodiversity Area Coverage (KBA) in Uganda (continued)

Opportunities for action

There is opportunity for Uganda to increase protection of KBAs that have lower levels of coverage by PAs and OECMs; priority could be given to those with no current coverage.

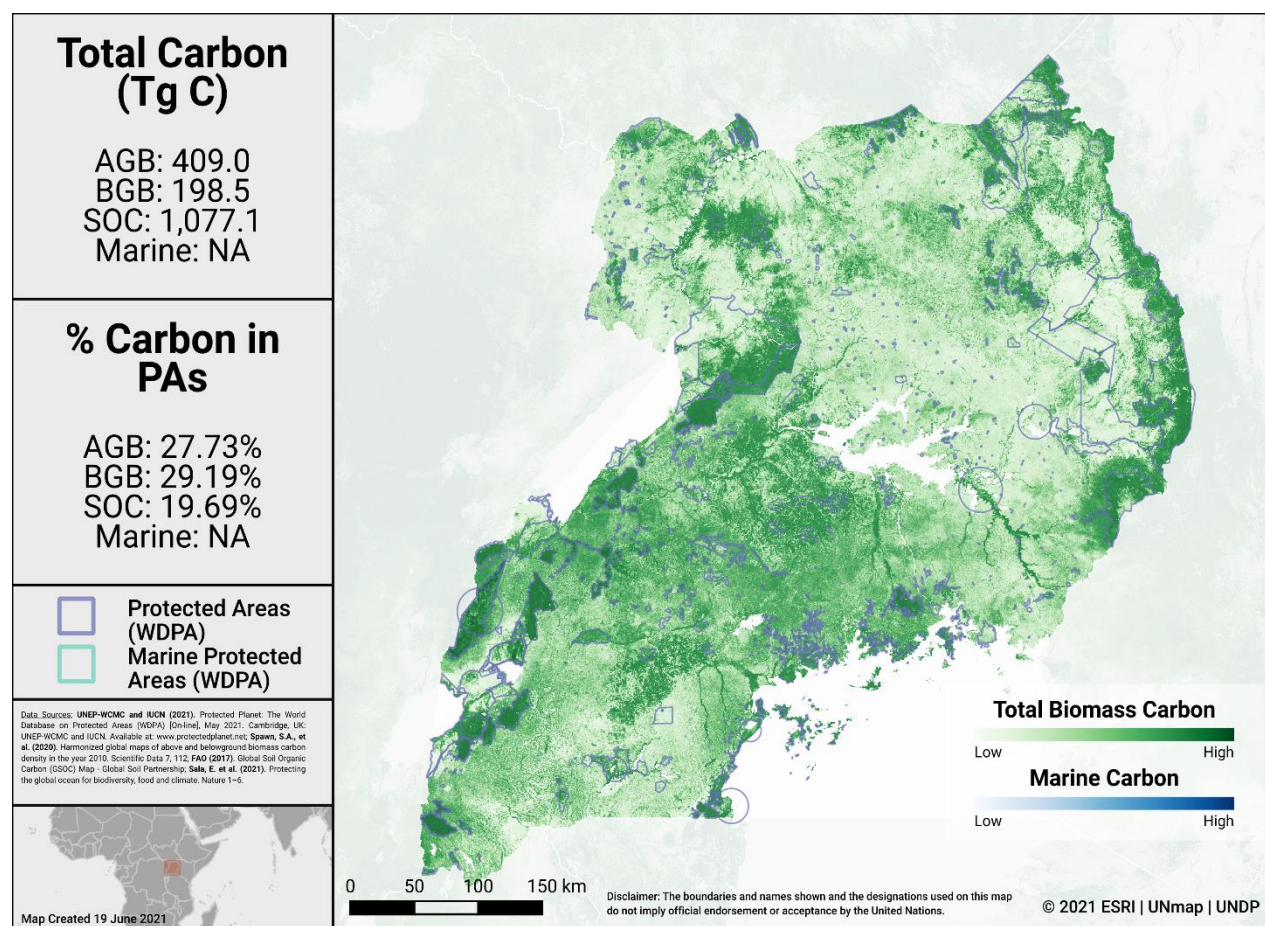
AREAS IMPORTANT FOR ECOSYSTEM SERVICES

There is no single indicator identified for assessing the conservation of areas important for ecosystem services. For simplicity, two services with available global datasets are assessed here (carbon and water). In future, other critical ecosystem services could be explored.

Carbon

Data for biomass carbon comes from temporally consistent and harmonized global maps of aboveground biomass and belowground biomass carbon density (at a 300-m spatial resolution); the maps integrate land-cover specific, remotely sensed data, and land-cover specific empirical models (see Spawn et al., 2020 for details on methodology). The Global Soil Organic Carbon Map present an estimation of SOC stock from 0 to 30 cm (see FAO, 2017 for details on methodology).

The map below presents the total carbon stocks in Uganda and the percent of carbon in protected areas. The total carbon stocks is 409.0 Tg C from aboveground biomass (AGB), with 27.7% in protected areas; 198.5 Tg C from below ground biomass (BGB), with 29.2% in protected areas and 1,077.1 Tg C from soil organic carbon (SOC), with 19.7% in protected areas.



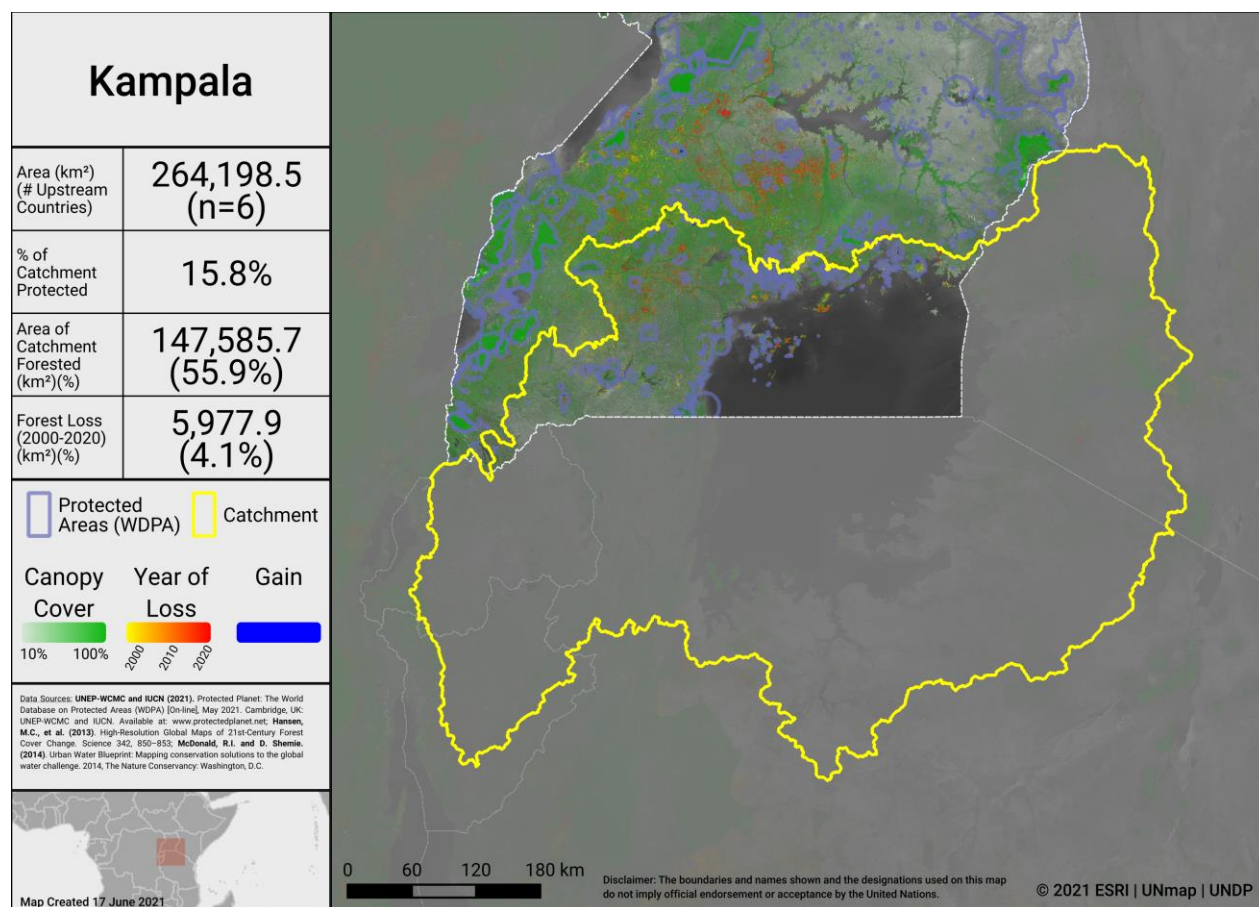
Carbon Stocks in Uganda

Water

Information on the water sources for 534 cities is available via the City Water Map (CWM) and provides details on the catchment area of the watershed that supplies these cities (see McDonald et al., 2014 for details on methodology).

Forests support stormwater management and clean water availability, especially for large urban populations. Research that has examined the role of forests for city drinking water supplies shows that of the world’s 105 largest cities, more than 30% (33 cities) rely heavily on the local protected forests, which provide ecosystem services that underpin local drinking water availability and quality (Dudley & Stolton, 2003).

Drinking water supplies for cities in Uganda may similarly depend on protected forest areas within and around water catchments. The map below shows the percentage forest and PA cover and the forest loss from 2000-2020 in the most heavily populated water catchment of Uganda. Intact catchments can support more consistent water supply and improved water quality.



Water supply area for the city of Kampala

21 | Aichi Biodiversity Target 11 Country Dossier: UGANDA

In Uganda, challenges for assessing the status of the conservation of areas important for ecosystem services, include limited funding for facilitating the studies, and limited in-house capacity to undertake the studies.

Opportunities for action

For carbon, there is opportunity for Uganda to increase PA and OECM coverage in terrestrial areas with high carbon stocks, as identified in the map above. Protecting areas with high carbon stocks secures the benefits of carbon sequestration in the area.

For water, there is opportunity to increase the area of the water catchment under protection by PAs and OECMs, or in cases where there is high levels of protection, focus on effective management for these areas. Protecting the current area of forested land and potentially reforesting would have benefits for improving water security.



CONNECTIVITY & INTEGRATION

Two global indicators, the Protected Connected land indicator (ProtConn; EC-JRC, 2021; Saura et al., 2018) and the PARC-Connectedness indicator (CSIRO, 2019), have been proposed for assessing the terrestrial connectivity of PA and OECM networks (to date there is no global indicator for assessing marine connectivity).

Protected Connected Land Indicator (Prot-Conn)

As of January 2021, as reported in the Joint Research Centre of the European Commission’s Digital Observatory for Protected Areas (DOPA) (JRC, 2021), the coverage of protected-connected lands (a measure of the connectivity of terrestrial protected area networks, assessed using the ProtConn indicator) in Uganda was 6.4%.

PARC-Connectedness Index

In 2019, as assessed using the PARC-Connectedness Index (values ranging from 0-1, indicating low to high connectivity), connectivity in Uganda is 0.32. This represents no significant change since 2010.

Corridor case studies

Below are details from a case study on corridors and connectivity in Uganda:

Case study title	Type of study region	Greatest threat to connectivity	Approaches to conserving ecological corridors
Conserving six landscapes of the Albertine Rift to ensure connectivity	terrestrial, rural	habitat loss and fragmentation	<ul style="list-style-type: none"> • facilitating cooperation • developing sustainable-use community areas

Further details are available in Hilty et al 2020.

Opportunities for action

There is opportunity for the targeted designation of PAs or OECMs in strategic locations for connectivity, and to focus on PA and OECM management for enhancing and maintaining connectivity. Improving connectivity increases the effectiveness of PAs and OECMs and reduces the impacts of fragmentation.

As well, a range of suggested steps for enhancing and supporting integration are included in the voluntary guidance on the integration of PAs and OECMs into the wider land- and seascapes and mainstreaming across sectors to contribute, inter alia, to the SDGs (Annex I of COP Decision 14/8).



GOVERNANCE DIVERSITY

There is a lack of comprehensive global data on governance quality and equity in PAs and OECMs. Here, we provide data on the diversity of governance types for reported PAs and OECMs.

As of May 2021, PAs in Uganda reported in the WDPA have the following governance types:

- 98.2% are governed by **governments**
 - 97.7% by federal or national ministry or agency
 - 0.0% by sub-national ministry or agency
 - 0.4% by government-delegated management
- 0.0% are under **shared** governance
- 0.0% are under **private** governance
- 0.0% are under **IPLC** governance
- 1.8% **do not** report a governance type
 - (All of which are international designations)

OECMs

As of May 2021, there are **0** OECMs in Uganda reported in the WD-OECM, therefore there is no data available on OECM governance types.

The main challenge in Uganda is the lack of comprehensive data on governance quality and equity in PAs and OECMs, highlighting the importance of carrying out assessments of governance and equity (see below).

Privately Protected Areas (PPAs)

There is currently no data available on PPAs for Uganda (see Gloss et al., 2019, and Stolton et al., 2014 for details).

Territories and areas conserved by Indigenous Peoples and local communities (ICCAs)

There is currently no data available on ICCAs for Uganda (see Kothari et al., 2012 and the [ICCA Registry](#) for further details).

Other Indigenous lands

Lands managed and/or controlled by Indigenous Peoples cover an area of 27,718.0 km², of which 14,650.0 km² falls outside of formal protected areas. Indigenous lands with a human footprint less than 4 (considered as 'natural landscapes') cover an area of 4,786.0 km² (for details on analysis see Garnett et al., 2018).



For Uganda, evidence for the presence of Indigenous Peoples comes from: Indigenous Work Group on Indigenous Affairs. Indigenous World 2017 (Indigenous Working Group on Indigenous Affairs, 2017).

Boundaries of the lands Indigenous Peoples manage or have tenure rights over come from: Benet: [Dirkse, A. A case study of the “Benet Land Problem” in Eastern Uganda (University of Vermont, 2017)] Batwa: [Lewis, J. The Batwa pygmies of the great lakes region. Vol. 209 (Minority Rights Group International, 2000)] Karamojong, Pokot, Teuso (Ik), Tepes: [Simons, G. F. & Fennig, C. D. (eds). Ethnologue: Languages of the World. Twentieth ed. (SIL International, 2017)].

Opportunities for action

Explore opportunities for governance types that have lower representation, for Uganda this relates to governance by Indigenous Peoples and/or local communities (IPLC), private governance, and shared governance.

There is also opportunity for Uganda to complete governance and equity assessments, to establish baselines and identify relevant actions for improvement. Examples of existing tools and methodologies include: Governance Assessment for Protected and Conserved Areas (Franks & Brooker, 2018), Social Assessment of Protected Areas (Franks et al 2018), and Site-level assessment of governance and equity (IIED, 2020). As well, a range of suggested actions are included in the voluntary guidance on effective governance models for management of protected areas, including equity (Annex II of COP Decision 14/8).

Equator Prize Projects

The Equator Initiative brings together the United Nations, governments, civil society, businesses and grassroots organizations to recognize and advance local sustainable development solutions for people, nature and resilient communities.

The Equator Prize projects provide examples of unique and locally based governance of natural resources. Uganda has the following Equator Prize winners that showcase examples of local, sustainable community action:



Organization	Year	Project Description
Uplift the Rural Poor	2014	<p>Uplift the Rural Poor was founded to improve the livelihoods of communities living adjacent to a series of three biodiversity rich protected areas in Uganda: Bwindi Gorilla National Park, Mgahinga Gorilla National Park, and Echuya Forest Reserve. Uplift the Rural Poor works to reduce pressure on forest resources and an important gorilla habitat, while also creating alternative livelihood strategies. The organization focuses on capacity building, community-driven planning and monitoring, bamboo domestication, climate change adaptation, potato farming, and safe water access.</p> <p>The organization’s primary achievement has been strengthening the relationship between rural communities and management authorities responsible for the three critical protected areas. The organization effectively supports community participation in natural resource management and local development plans, thus empowering forest dependent communities. Rainwater harvesting tanks, owned and operated mostly by women, have been built in 20 water stressed communities. A series of village savings and loans programmes has helped to create small-scale businesses, while also reducing debt and reliance on moneylenders.</p>



Photo from Equator Prize Project: Uplift the Rural Poor

PROTECTED AREA MANAGEMENT EFFECTIVENESS

This section provides information on the coverage of PAs and OECMs with completed protected area management effectiveness (PAME) assessments as reported in the global database (GD-PAME). The proportion of terrestrial and marine PAs with completed PAME assessments is also calculated and compared with the 60% target agreed to in COP-10 Decision X/31. Information is also included regarding changes in forest cover nationally within PAs and OECMs.

Protected area management effectiveness (PAME) assessments

As of May 2021, Uganda has 711 PAs reported in the WDPA; of these PAs, 37 (5.2%) have management effectiveness evaluations reported in the global database on protected area management effectiveness (GD-PAME).

- 6.6% (16,000 km²) of the terrestrial area of the country is covered by PAs with completed management effectiveness evaluations.
 - 41.0% of the area of terrestrial PAs have completed evaluations.

The 60% target for completed management effectiveness assessments (per COP Decision X/31) **has not** been met for terrestrial PAs.

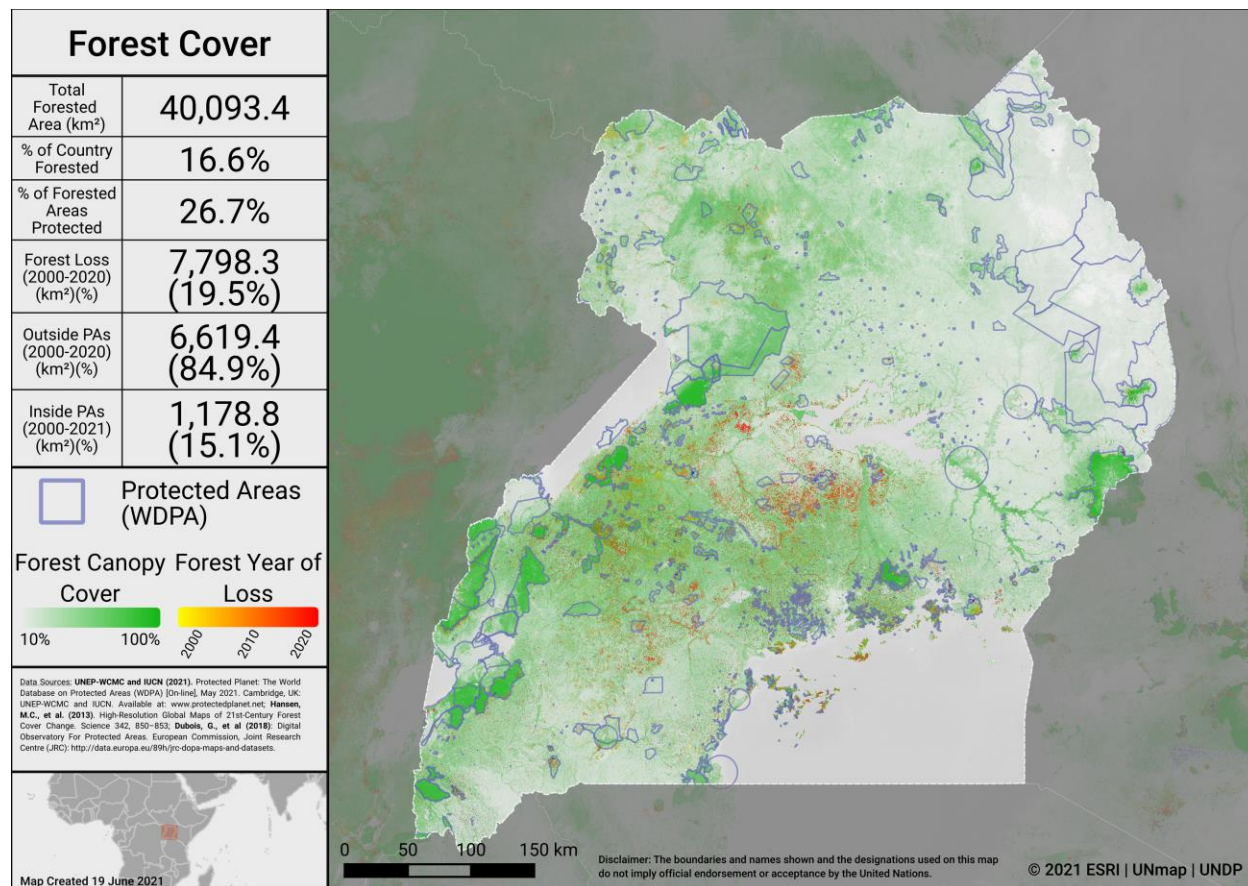
The main challenge in Uganda is limited funding to carry out assessments of PAME.

As of May 2021, there are 0 OECMs in Uganda reported in the WD-OECM and no information available on the management effectiveness of potential OECMs.

Changes in forest cover in protected areas and OECMs

Forested areas in Uganda cover approximately 16.6% of the country, an area of 40,093.4 km². Approximately 26.7% (10,718.7 km²) of this is within the protected area estate of Uganda. Over the period 2000-2020 loss of forest cover amounted to over 7,798.2 km², or 3.2% of the country (19.5% of forest area), of which 1,178.8 km² (15.1% of forest loss) occurred within protected areas. The map below shows how forest cover has changed in Uganda from 2000-2020 both inside and outside of PAs. This can indicate how effective PAs are in reducing forest cover loss.





Forest Cover and Forest Loss in Uganda

Opportunities for action

The 60% target for completed management effectiveness assessments (per COP Decision X/31) **has not** been met for terrestrial PAs, therefore, there is opportunity to increase protected area management effectiveness (PAME) evaluations for terrestrial PAs to achieve the target.

There is also opportunity to implement the results of completed PAME evaluations, to improve the quality of management for existing PAs and OECMs (e.g. through adaptive management and information sharing, increasing the number of sites reporting 'sound management') and to increase reporting of biodiversity outcomes in PAs and OECMs.

SECTION II: EXISTING PROTECTED AREA AND OECM COMMITMENTS

PRIORITY ACTIONS FROM 2015-2016 REGIONAL WORKSHOPS

National priority actions for Aichi Biodiversity Target 11 were provided by Parties following a series of regional workshops in 2015 and 2016. The Capacity-building workshop for Africa on achieving Aichi Biodiversity Targets 11 and 12 took place 21 - 24 March 2016 in Entebbe, Uganda. Progress towards the quantitative targets for marine and terrestrial coverage has been assessed based on data reported in the WDPA and WD-OECM as of 2021. For more information, see the workshop report at:

<https://www.cbd.int/meetings/>

Summary from the workshop:

Priority actions and identified opportunities, if completed as proposed, will provide benefits for the qualifying elements of Aichi Biodiversity Target 11.

The following actions were identified during the workshops:

Terrestrial coverage:

- 1) Country wide assessment and mapping of forest reserves and wetlands
- 2) Site management plans to be developed for the remaining protected areas.

Ecological representation: Mapping of all the 9 ecological zones.

Areas Important for biodiversity and ecosystem services: Assessment and mapping of important areas for biodiversity conservation, which fall outside of protected areas.

Connectivity:

- 1) Inventory of areas that need to be considered for landscape management
- 2) Secure integrity of important biodiversity/wildlife corridors using the landscape-based planning and management.

Management effectiveness:

- 1) Carry out assessment of management effectiveness of protected areas including governance assessment
- 2) Develop and implement financial sustainability plans for protected areas
- 3) Assessment of ecological gaps in the protected area network
- 4) Assessing protected area capacity needs and the appropriate technology needs.



Governance and Equity:

- 1) Capacity building and sensitization of stakeholders on governance and equity
- 2) Assess and evaluate effectiveness of existing Collaborative Forest Management and collaborative natural resource management
- 3) Promote protected areas as core drivers for nature-based tourism and achievement of sustainable development goals.

Integration into the wider landscape: No actions were identified for this element of Target 11.

OECMs:

- 1) Develop guidelines and upscale Payment for Ecosystem Services (PES) initiatives
- 2) Develop and pilot guidelines on biodiversity offsets
- 3) Mitigate human-wildlife conflict
- 4) Support alternative livelihood options for local communities adjacent to protected areas.



NATIONAL BIODIVERSITY STRATEGY AND ACTION PLANS (NBSAPs)

Uganda has submitted an NBSAP during the Strategic Plan for Biodiversity 2011-2020 (most recent NBSAP is available at: <https://www.cbd.int/nbsap/search/>).

This NBSAP **did** include a quantitative target for **terrestrial** PAs or OECMs.

National target 3.1: By 2020, at least 17% of terrestrial and inland water ecosystems in Uganda are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas for socio-economic benefit of the population

- As of May 2021 (based on the WDPA/WD-OECM) has the target been met: **NO**
- Accounting for other projects, actions and commitments, if this target is met, coverage in the country will increase by **2,281 km²**.

Actions from the NBSAP will also address other elements of Aichi Biodiversity Target 11:

NBSAP Action #	Action (original language from NBSAP)	Progress (as of 2021)
3.1.1	Develop and implement management PA plans	All wildlife protected areas have management plans.
3.1.5	Identify and fill gaps in the PA networks to conserve ecologically sensitive vegetation types, habitats, species and genetic diversity	There are still remaining gaps



APPROVED GEF-5, GEF-6, & GCF PROTECTED AREA PROJECTS

Approved GEF-5 and GEF-6 PA-related biodiversity projects

This includes biodiversity projects from the fifth and sixth replenishment of the Global Environment Facility (GEF-5 and GEF-6) with a clear impact of the quantity or quality of PAs; also including some projects occurring within the wider landscapes/seascapes around PAs. Only those with a status of 'project approved' or 'concept approved' as of June 2019 were considered. The qualifying elements likely benefiting from each GEF project is assessed based on a keyword search of Project Identification Forms (PIF).

GEF ID	PA increase?	Area to be added (km ²)	Type of new protected area	Qualitative elements potentially benefitting (based on keyword search of PIFs)
4456	No	already in WDPA	Terrestrial	All except Ecosystem services and Equitably managed
9137	No	N/A	N/A	Integration
9481	No	N/A	N/A	Equitably managed

Approved Green Climate Fund (GCF) Protected Area-related biodiversity projects

The Green Climate Fund's investments listed as approved projects as of May 2021 were considered. The GCF supports paradigm shifts in both climate change mitigation and adaptation that may impact quality of PAs or contribute to better integration within the wider land- and seascapes around PAs. Only projects with result areas for either or both *Forest and Land Use and Ecosystems* and *Ecosystem Services result areas* were included.

GCF ID	Project theme	Result area	Target 11 element
FP034	Adaptation	Ecosystems and ecosystem services	Integration; Areas important for biodiversity; Ecosystem services
FP128	Mitigation	Forest and land use	Integration; Connectivity; Effectively managed



OTHER ACTIONS/COMMITMENTS

Leaders' Pledge for Nature

Uganda **has** signed onto the Leaders' Pledge for Nature.

Political leaders participating in the United Nations Summit on Biodiversity in September 2020, representing 84 countries from all regions and the European Union, have committed to reversing biodiversity loss by 2030. By doing so, these leaders are sending a united signal to step up global ambition and encourage others to match their collective ambition for nature, climate, and people with the scale of the crisis at hand.

High Ambition Coalition for Nature and People

Uganda **has** joined the High Ambition Coalition for Nature and People.

The High Ambition Coalition for Nature and People (HAC) is an intergovernmental group, co-chaired by France and Costa Rica [currently including 65 countries and the European Commission]. Its objective is to support the adoption of a target aiming to protect 30% of the planet's land and 30% of its oceans by 2030 (30x30 target), within the future global framework of the Convention on Biological Diversity (CBD) for the protection of biodiversity, which is to be adopted at the next COP in China this autumn.



Commitments for PAs and OECMs from Other National Policies

Policy document	Ecosystem	Policy text
Nationally Determined Contribution	Forest ecosystems	Avoided forest conversion: 11.26 Mt CO ₂ e/yr
Nationally Determined Contribution	Wetland ecosystems	Avoided peat impacts: 7.92 Mt CO ₂ e/yr
Nationally Determined Contribution	Forest ecosystems	Reverse deforestation trend to increase forest cover to 21% in 2030, from approximately 14% in 2013, through forest protection, afforestation and sustainable biomass production measures
Nationally Determined Contribution	Forest ecosystems	Adaptation: Promoting biodiversity & watershed conservation (including reestablishment of wildlife corridors)
Nationally Determined Contribution	Wetland ecosystems	Managing water resource systems, including wetlands, particularly in cities, in such a way that floods are prevented, and existing resources conserved (through the establishment of an Integrated Water Resources Management system
Nationally Determined Contribution	Wetland ecosystems	Creation of national information database through re-inventory and assessment of all wetlands
Nationally Determined Contribution	Wetland ecosystems	Design and implementation of 11 RAMSAR site wetland research, eco-tourism and education centres
Nationally Determined Contribution	Wetland ecosystems	Design and implementation of 111 District wetland action plans, with carbon sink potential
Nationally Determined Contribution	Wetland ecosystems	Demarcation and gazettement of 20 critical and vital wetland systems and their maintenance country wide as carbon sink
Nationally Determined Contribution	Wetland ecosystems	Wetlands law enforcement and governance
Nationally Determined Contribution	Grasslands & Agricultural systems	Climate Smart Agriculture techniques for cropping (Agricultural soils: 36% of national GHG emissions (13.5 Million tons of carbon dioxide equivalent per year (MtCO ₂ eq/yr).) in 2000)
Nationally Determined Contribution	Grasslands & Agricultural systems	: Expanding Climate Smart Agriculture (CSA) and research on climate resilient crops and animal breeds

Policy document	Ecosystem	Policy text
Tourism Development Master Plan	Wetland ecosystems	Protect lake and river shores from encroachment and pollution
National Food and Nutrition Policy	Grasslands & Agricultural systems	Promoting rain-water harvesting and conservation for agricultural production
Green Growth Development Strategy	Forest ecosystems	Improved technology for enhanced efficiency in using biomass for domestic cooking and industrial uses by 2020
Green Growth Development Strategy	Forest ecosystems	Biomass energy for electricity through cogeneration by sugar companies and other modern technology options by 2030
National Climate Change Policy	Forest ecosystems	Promote sustainable energy access and utilization as a means of sustainable development in the face of uncertainties related to climate change
National Climate Change Policy	Forest ecosystems	Encourage the use of alternative fuels instead of heavily relying on biomass
Ramsar Convention on Wetlands Strategic Plan	Wetland ecosystems	To protect the most important wetlands in Uganda
Uganda Wetland Policy	Wetland ecosystems	Protect all drinking water sources
Uganda Wetland Policy	Wetland ecosystems	Establish fully "Protected Wetlands Areas" of important biological diversity



ANNEX I

FULL LIST OF ECOREGIONS

Ecoregion Name	Area (km ²)	% of Global Ecoregion in Country	% of Country in Ecoregion	Area Protected (km ²)	% Protected in Country
Albertine Rift montane forests	26,989.3	17.9	11.2	5,507.2	20.4
East African montane forests	4,117.1	6.7	1.7	2,362.7	57.4
East African montane moorlands	345.8	11.2	0.1	338.3	97.8
East Sudanian savanna	71,387.3	6.8	29.6	14,233.0	19.9
Northern Acacia-Commiphora bushlands and thickets	9,195.2	2.5	3.8	4,312.5	46.9
Northern Congolian Forest-Savanna	368.2	0.1	0.2	217.0	58.9
Rwenzori-Virunga montane moorlands	277.2	53.7	0.1	276.6	99.8
Victoria Basin forest-savanna	94,663.4	57.1	39.2	10,722.8	11.3



REFERENCES

- Atwood, TB, Witt, A, Mayorga, J, Hammill, E, & Sala, E. (2020). Global patterns in marine sediment carbon stocks. *Frontiers in Marine Science*.
<https://doi.org/10.3389/fmars.2020.00165>
- BirdLife International (2021). World Database of Key Biodiversity Areas. Available at:
<http://www.keybiodiversityareas.org>
- CBD (2010). Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its tenth meeting. Decision X/2. Strategic plan for biodiversity 2011–2020. Retrieved from <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec02-en.pdf>.
- CSIRO (2019). Protected area connectedness index (PARCconnectedness).
<https://www.bipindicators.net/indicators/protected-area-connectedness-index-parconnectedness>
- Dinerstein, E., et al. (2017). An ecoregion-based approach to protecting half the terrestrial realm. *BioScience* 67(6), 534-545.
- Donald et al., 2019, The prevalence, characteristics and effectiveness of Aichi Target 11' s "other effective area-based conservation measures" (OECMs) in Key Biodiversity Areas. *Conservation Letters*, 12(5).
- EC-JRC (2021). DOPA Indicator factsheets: <http://dopa.jrc.ec.europa.eu/en/factsheets>
- FAO (2017). Global Soil Organic Carbon (GSOC) Map - Global Soil Partnership [WWW Document]. URL <http://www.fao.org/global-soil-partnership/pillars-action/4-information-and-data/global-soil-organic-carbon-gsoc-map/en/>.
- Franks, P and Booker, F (2018). Governance Assessment for Protected and Conserved Areas (GAPA): Early experience of a multi-stakeholder methodology for enhancing equity and effectiveness. IIED Working Paper, IIED, London. <https://pubs.iied.org/17632IIED>
- Franks, P. et al. (2018). Social Assessment for Protected and Conserved Areas (SAPA). Methodology manual for SAPA facilitators. Second edition. IIED, London.
<https://pubs.iied.org/14659iied>
- Garnett et al. (2018). A spatial overview of the global importance of Indigenous lands for conservation. *Nature Sustainability*, 1(7), 369.
- Global Environment Facility (GEF-5 and GEF-6); all projects can be found online at:
<https://www.thegef.org/projects>
- Gloss, L. et al. (2019). International Outlook for Privately Protected Areas: Summary Report. International Land Conservation Network (a project of the Lincoln Institute of Land Policy) and United Nations Development Programme. Summary report, and individual country profiles, available at: <https://nbsapforum.net/knowledge-base/resource/international-outlook-privately-protected-areas-summary-report>

37 | Aichi Biodiversity Target 11 Country Dossier: UGANDA

Hansen, M.C., Potapov, P.V., Moore, R., Hancher, M., Turubanova, S.A., Tyukavina, A., Thau, D., Stehman, S.V., Goetz, S.J., Loveland, T.R., Kommareddy, A., Egorov, A., Chini, L., Justice, C.O., Townshend, J.R.G., (2013). High-Resolution Global Maps of 21st-Century Forest Cover Change. *Science* 342, 850–853. <https://doi.org/10.1126/science.1244693>

Hilty, J et al. (2020). Guidelines for conserving connectivity through ecological networks and corridors. Best Practice Protected Area Guidelines Series No. 30. Gland, Switzerland: IUCN. <https://portals.iucn.org/library/sites/library/files/documents/PAG-030-En.pdf>

IIED 2020. Site-level assessment of governance and equity (SAGE) <https://www.iied.org/site-level-assessment-governance-equity-sage>.

IUCN (2016). A Global Standard for the Identification of Key Biodiversity Areas, Version 1.0. First edition. Gland, Switzerland: IUCN. <https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf>

IUCN-WCPA (2017). IUCN-WCPA Task Force on OECMs collation of case studies submitted 2016-2017. <https://www.iucn.org/commissions/world-commission-protected-areas/our-work/oecms/oecm-reports>

Joint Research Centre of the European Commission (JRC) (2021), The Digital Observatory for Protected Areas (DOPA) Explorer 4.1 [On-line], [Apr/2021], Ispra, Italy. Available at: <http://dopa-explorer.jrc.ec.europa.eu>

Kothari, A., et al. (Eds) (2012). Recognising and Supporting Territories and Areas Conserved By Indigenous Peoples And Local Communities: Global Overview and National Case Studies. Secretariat of the CBD, ICCA Consortium, Kalpavriksh, and Natural Justice, Montreal, Canada. Technical Series no. 64.

Lausche, B., Laur, A., Collins, M. (2021). *Marine Connectivity Conservation 'Rules of Thumb' for MPA and MPA Network Design*. Version 1.0. IUCN WCPA Connectivity Conservation Specialist Group's Marine Connectivity Working Group.

McDonald, R.I., Weber, K., Padowski, J., Flörke, M., Schneider, C., Green, P.A., Gleeson, T., Eckman, S., Lehner, B., Balk, D., Boucher, T., Grill, G., Montgomery, M., (2014). Water on an urban planet: Urbanization and the reach of urban water infrastructure. *Global Environmental Change* 27, 96–105. <https://doi.org/10.1016/j.gloenvcha.2014.04.022>

National Biodiversity Strategy and Action Plan (NBSAPs); most recent NBSAP is available at: <https://www.cbd.int/nbsap/search/>

Newbold, T., Hudson, L.N., Arnell, A.P., Contu, S., Palma, A.D., Ferrier, S., Hill, S.L.L., Hoskins, A.J., Lysenko, I., Phillips, H.R.P., Burton, V.J., Chng, C.W.T., Emerson, S., Gao, D., Pask-Hale, G., Hutton, J., Jung, M., Sanchez-Ortiz, K., Simmons, B.I., Whitmee, S., Zhang, H., Scharlemann, J.P.W., Purvis, A., (2016). Has land use pushed terrestrial biodiversity beyond the planetary boundary? A global assessment. *Science* 353, 288–291. <https://doi.org/10.1126/science.aaf2201>

Sala, E. et al. (2021). Protecting the global ocean for biodiversity, food and climate. *Nature*, 592(7854), 397-402.

Saura, S. et al. (2018). Protected area connectivity: Shortfalls in global targets and country-level priorities. *Biological Conservation*, 219, 53-67.

Saura, S. et al (2017). Protected areas in the world's ecoregions: How well connected are they? *Ecological Indicators*, 76, 144-158.

Spalding, M.D., et al. (2012). Pelagic provinces of the world: a biogeographic classification of the world's surface pelagic waters. *Ocean & Coastal Management* 60, 19–30.

Spalding, M.D., et al. (2007). Marine ecoregions of the world: a bioregionalization of coastal and shelf areas. *BioScience* 57(7): 573–583.

Spawn, S.A., Sullivan, C.C., Lark, T.J., Gibbs, H.K., (2020). Harmonized global maps of above and belowground biomass carbon density in the year 2010. *Scientific Data* 7, 112. <https://doi.org/10.1038/s41597-020-0444-4>

Stolton, S. et al. (2014). *The Futures of Privately Protected Areas*. Gland, Switzerland: IUCN.

UNEP-WCMC and IUCN (2021) *Protected Planet Report 2020*. UNEP-WCMC and IUCN: Cambridge UK; Gland, Switzerland.

UNEP-WCMC and IUCN (2021), *Protected Planet: The Global Database on Protected Area Management Effectiveness (GD-PAME)* [On-line], [May/2021], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

UNEP-WCMC and IUCN (2021), *Protected Planet: The World Database on Protected Areas (WDPA)* [On-line], [May/2021], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

UNEP-WCMC and IUCN (2021), *Protected Planet: The World Database on Other Effective Area-based Conservation Measures (WD-OECM)* [On-line], [May/2021], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

UN Ocean Conference Voluntary Commitments, available at:

<https://oceanconference.un.org/commitments/>

Williams, B.A., Venter, O., Allan, J.R., Atkinson, S.C., Rehbein, J.A., Ward, M., Marco, M.D., Grantham, H.S., Ervin, J., Goetz, S.J., Hansen, A.J., Jantz, P., Pillay, R., Rodríguez-Buriticá, S., Supples, C., Virnig, A.L.S., Watson, J.E.M., (2020). Change in Terrestrial Human Footprint Drives Continued Loss of Intact Ecosystems. *One Earth* 3, 371–382.

<https://doi.org/10.1016/j.oneear.2020.08.009>



This document was created using the knitr package with R version 4.0.5.

For any questions please contact support@unbiodiveristylab.org.

