



Carbon Project Feasibility Study Kidepo Valley Landscape-Uganda

Subaward Number 8-330-0217510-66906L RTI International

March 6, 2023

CONTENTS

1. EXECUTIVE SUMMARY	6
2. JURISDICTIONAL BASELINE AREA AND PROJECT AREA	9
2.1. PROTECTED AREAS IN THE PROJECT AREA	10
3. BIOPHYSICAL INFORMATION	12
3.1. CLIMATE.....	12
3.2. HYDROLOGY AND SOILS	13
3.3. ECOSYSTEMS	14
3.4. LAND COVER AND LAND-USE	17
4. RELEVANT LAWS AND POLICES	21
4.1. LAND TENURE TYPES AND STATUS	24
4.2. LEGAL ABILITY TO CLEAR FOR AGRICULTURE	26
5. COMMUNITIES AND STAKEHOLDERS	28
5.1. DESCRIPTION OF COMMUNITIES IN THE PROJECT AREA.....	28
5.2. COMMUNITY AND INSTITUTIONAL STRUCTURES	32
6. BIODIVERSITY	40
6.1. BIODIVERSITY IN UGANDA.....	40
6.2. BIODIVERSITY OF THE PROJECT AREA.....	42
7. DRIVERS AND AGENTS OF DEFORESTATION	46
7.1. DRIVERS OF DEFORESTATION AND FOREST DEGRADATION.....	46
8. PROJECT OBJECTIVES	56
8.1. PROBLEM ANALYSIS.....	56
8.2. OBJECTIVES.....	56
8.3. THEORY OF CHANGE	57
8.4. PROPOSED PROJECT ACTIVITIES TO ACHIEVE THE PROPOSED OUTCOMES	59
9. OPTIONS FOR MARKET STANDARDS	66
9.1. RELEVANT MARKET STANDARDS OVERVIEW	66
10. CARBON ESTIMATES	72
10.1. DEFINE A VALID REFERENCE REGION.....	72
10.2. DESCRIPTION OF LULC AND FOREST CLASSES FOR DEFORESTATION AND DEGRADATION	73
10.3. ALLOWED LULC CHANGE CATEGORIES.....	73
10.4. DEFORESTATION AND DEGRADATION IN THE JURISDICTIONAL BASELINE AREA AND IN THE PROJECT AREA.....	74
10.5. CARBON STOCKS	78
10.6. TEMPORAL BOUNDARIES OF THE BASELINE.....	80
10.7. LEAKAGE	80
10.8. NET GHG EMISSION REDUCTIONS AND REMOVALS	80
10.9. SUMMARY OF EMISSION REDUCTIONS AND REMOVALS	84
11. SECURING PRIVATE SECTOR CLIMATE FINANCE.....	86
11.1. PROCESS TO SECURE CLIMATE FINANCE INVESTMENT.....	86
11.2. INVESTMENT READINESS REQUIREMENTS.....	86
12. IMPLEMENTATION AND MANAGEMENT COORDINATION	92
13. FINANCIAL PROJECTIONS FOR PROJECT AREA	99
13.1. IMPLEMENTATION COSTS ESTIMATES	99
13.2. VERR DEVELOPMENT AND IMPACT MONITORING COST	107
13.3. NET CASHFLOW (CARBON REVENUE ONLY).....	109

13.4. OTHER SOURCES OF FUNDING	ERROR! BOOKMARK NOT DEFINED.
14. JURISDICTIONAL PROGRAM CARBON PROJECTIONS.....	113
15. PROJECT RISKS	116
15.1. INTERNAL RISKS	116
15.2. EXTERNAL RISKS.....	123
15.3. NATURAL RISKS	127
15.4. TOTAL RISK BUFFER.....	130
16. ANNEXES	132
17. REFERENCES	134

List of Tables

TABLE 1. JURISDICTIONAL BASELINE AREA, PROJECT AREA, AND LEAKAGE AREA	9
TABLE 2. TOTAL SIZE OF PROJECT AREA	10
TABLE 3. NATURAL VEGETATION TYPES IN PROJECT AREA	15
TABLE 4. LANDCOVER IN THE JURISDICTIONAL BASELINE AREA (NFA, 2017)	18
TABLE 5. LANDCOVER IN THE PROJECT AREA (NFA, 2017)	19
TABLE 6. RELEVANT LAND LAWS IN UGANDA.....	21
TABLE 7. REGIONAL AND INTERNATIONAL AGREEMENTS	23
TABLE 8. POPULATION, HOUSEHOLDS, AND GROWTH IN THE PROJECT AREA.....	29
TABLE 9. DRIVERS OF DEFORESTATION AND DEGRADATION KIDEPO VALLEY LANDSCAPE.....	47
TABLE 10. SUMMARY OF DEFORESTATION DRIVERS AND CORRESPONDING AGENTS ACTIVE IN KIDEPO VALLEY LANDSCAPE.....	48
TABLE 11. PROJECT AND LEAKAGE PREVENTION ACTIVITIES AND THE TARGETED DEFORESTATION DRIVERS IN KIDEPO VALLEY LANDSCAPE .	60
TABLE 12. AFOLU STANDARDS THAT INCLUDE JURISDICTIONAL ACCOUNTING	66
TABLE 13. SUMMARY OF JNR OPTIONS FOR KIDEPO VALLEY LANDSCAPE (ASSUMING NO NATIONAL VERRA JNR PROGRAM)	68
TABLE 14. FOREST AND NON-FOREST CLASSES USED FOR DEFORESTATION.	73
TABLE 15. ALLOWED TRANSITIONS BETWEEN LULC IN THE JURISDICTIONAL BASELINE AREA AND PROJECT AREA.....	73
TABLE 16. TOTAL FOREST AREA IN THE JURISDICTIONAL BASELINE AREA AND THE PROJECT AREA	74
TABLE 17. TOTAL FOREST AREA FOR THE BASELINE IN PROTECTED AREAS AND PRIVATE LAND WITHIN THE PROJECT AREA.....	75
TABLE 18. ANNUAL DEFORESTATION, DEGRADATION AND REFORESTATION BASED ON NFA (2015 - 2017) DATA.....	77
TABLE 19. HISTORICAL FOREST COVER USING HANSEN ET AL. (2022) DATA.	77
TABLE 20. ANNUAL DEFORESTATION RATES USING HANSEN ET AL. (2022) DATA.	78
TABLE 21. LULC TRANSITIONS FOR THE JURISDICTIONAL BASELINE AREA AND PROJECT AREA.	78
TABLE 22. MEAN BIOMASS CONTENT PER LAND COVER CLASS (NFA, 2019)	79
TABLE 23. MEAN BIOMASS CONTENT PER LAND COVER CLASS USED IN THE STUDY.	79
TABLE 24. EMISSION FACTORS	80
TABLE 26. KIDEPO VALLEY LANDSCAPE PROJECT SUMMARY OF EMISSION REDUCTIONS AND REMOVALS.....	84
TABLE 27. SUMMARY OF PROGRAM IMPLEMENTORS	92
TABLE 28. POTENTIAL SUPPORTING PARTNERS FOR KIDEPO VALLEY LANDSCAPE PROJECT	93
TABLE 29. ESTIMATED VERRS DEVELOPMENT COSTS (PROJECT AREA).....	108
TABLE 30. KEY ASSUMPTIONS FOR CASH FLOW PROJECTIONS	109
TABLE 31. PROJECTED CASH FOR PROJECT (W/O CLIMATE FINANCE YEARS 1 – 9)	109
TABLE 32. PROJECTED CASH FOR PROJECT (W/O CLIMATE FINANCE YEARS 1 – 9)	110
TABLE 33. UPPER NILE AND KYOGA WATER MANAGEMENT AREAS PROGRAM SUMMARY OF EMISSION REDUCTIONS AND REMOVALS..	114
TABLE 34. OVERALL RISK RATING.....	116

List of Figures

FIGURE 1. MEAN ANNUAL RAINFALL (MM) IN UGANDA (NSUBUGA F. <i>ET AL</i> , 2015), PROJECT AREA IN RED.	13
FIGURE 2. FAMILY COLLECTING SORGHUM IN KAAGONG DISTRICT	28
FIGURE 3. A TYPICAL VILLAGE IN ABIM DISTRICT	34
FIGURE 4. UGANDAN KOB (<i>KOBUS KOB THOMASI</i>) IN KIDEPO VALLEY NATIONAL PARK	40
FIGURE 5. AFRICAN JACANA (<i>ACTOPHILORNIS AFRICANUS</i>) IN KIDEPO VALLEY NATIONAL PARK.....	41
FIGURE 6. BUFFALOS (<i>SYNCERUS CAFFER</i>) IN KIDEPO VALLEY NATIONAL PARK.....	42
FIGURE 7. RED HARTEBEEST (<i>ALCELAPHUS CAAMA</i>) IN KIDEPO VALLEY NATIONAL PARK	43
FIGURE 8. CHARCOAL IS SOLD ALONG ROADSIDES AND IS USED FOR DOMESTIC COOKING IN URBAN AREAS.	49
FIGURE 9. AGRICULTURAL LANDS APPROACHING FOREST AREAS IN KAABONG DISTRICT.....	50
FIGURE 10. IN RURAL AREAS, WOMEN ARE RESPONSIBLE FOR COLLECTING FUELWOOD.	51
FIGURE 11. WOOD AND POLES USED FOR DOMESTIC CONSTRUCTION.....	51
FIGURE 12. TIMBER WOOD EXTRACTION FOR DOMESTIC CONSTRUCTION.	52
FIGURE 13. A MAIN TOWN AND MARKET IN ABIM DISTRICT EXPANDING TO CLOSE TO FOREST RESERVES.	53
FIGURE 14. WILDFIRE PRACTICE IN KARENGA WILDLIFE AREA	54
FIGURE 15. WOODLOT OF TEAK.	54
FIGURE 16. THEORY OF CHANGE FOR THE PROJECT AREA.....	58
FIGURE 17. STAGES AND COMPONENTS OF SECURING CLIMATE FINANCE.....	86
FIGURE 18. TYPICAL INSTITUTIONAL STRUCTURE AND KEY AGREEMENTS FOR PRIVATE SECTOR CLIMATE FINANCE.....	97

List of Maps

MAP 1. JURISDICTIONAL BASELINE AREA, PROJECT AREA, AND LEAKAGE AREA IN KIDEPO VALLEY, UGANDA.....	9
MAP 2. PROTECTED AREAS IN KIDEPO VALLEY, UGANDA	10
MAP 3. NATURAL VEGETATION TYPES IN JURISDICTIONAL BASELINE AREA (VAN DER MAAREL, 2005).	14
MAP 4. LAND COVER IN JURISDICTIONAL BASELINE AREA (NFA, 2017)	18
MAP 5. FOREST AREA IN THE BASELINE (2017) INSIDE AND OUTSIDE PROTECTED AREAS.	76
MAP 6. EXAMPLE OF LEGAL ENTITIES AND AGREEMENTS	127



Kano Forest Reserve in Abim District-Uganda



Section 1. Executive Summary



1. EXECUTIVE SUMMARY

The goal of the USAID/Uganda Biodiversity for Resilience (B4R) Activity, implemented by RTI International, is to assist communities, the Government of Uganda (GOU), and the private sector in conserving and managing biodiversity in target ecosystems for lasting environmental and economic sustainability and increased community and household resilience.

B4R works with the government agencies like Uganda Wildlife Authority and National Forest Authority (NF), local government ministries and district local governments to support community wildlife conservancies for protected areas management and Collaborative Forest Management (CFM) groups for improving governance and management of the forested areas in Kidepo Valley Landscape. Also, in partnership with the private sector B4R develop diverse and resilient local economies as agroforestry for sustainable charcoal production, improvement of livestock and ranching, value-added crops like sunflower, honey production and others.

Climate finance, generated through the generation of sale of verified emission reductions and removals (“VERRs”) could be a potential long-term revenue stream for community-based natural resource management. Such a project would implement activities that improved land management practices (e.g., forest management, fire management, soil management/regeneration) in the landscape and generate VERRS.

This feasibility study defines the opportunity for developing a carbon project in the Kidepo Valley Landscape that contributes to securing the financing for the long-term implementation of the activities that B4R has started in this landscape. As part of the B4R long-term strategy for achieving its mission “to create landscapes where wildlife populations, natural habitats, and empowered communities are resilient and prosperous,” carbon finance is an alternative for long-term and performance-based funding that could be suitable for this landscape.

This document describes the geographical details of the Kidepo Valley Landscape (“Project Area”) within a potential Jurisdictional REDD+ Program Area, which includes the two water management zones of Upper Nile and Kyoga, describes proposed activities, includes a review of existing market standards, provides carbon estimates, and provides a rough implementation budget. It also describes the next phase in which the potential project proponent, NFA and UWA, will have to work together to assess the investment readiness.

The forest areas in the Kidepo Valley Landscape are subject to unplanned deforestation and degradation due to subsistence-based activities. Some drivers include charcoal production, smallholder agriculture expansion, and fuelwood extraction. The agents for these drivers are primarily local farmers, charcoal traders, and hunters.

The Project Area covers a total area of 2.5 million hectares, of which 160,000 hectares are woodland forests (the main forest type in the area), showing a 2.7% net deforestation rate¹. The Project Area is

¹ Estimation for the Project Area based on information provided by the National Forest Authority (NFA, 2017).

located within two water management zones, Upper Nile and Kyoga, which are the administrative boundaries defined by the National REDD+ Strategy for all subnational REDD+ Projects. This Jurisdictional Baseline Area totals 12.2 million hectares (total forest cover of 719,779 hectares). Information about deforestation rates and carbon potential in this area is also included in this study.

Based on feasibility level estimates developing using existing data sources, the total cumulative number of VCUs for the Kidepo Valley Landscape Project is 18,711,362 over 30 years, which equals an average of 623,712 VCUs per year. These calculations were based on data and classified images provided by NFA. For the Jurisdictional REDD+ Program Area, including both Kyoga and Upper Nile water management areas, the total cumulative VCUs totals 94,691,656 over 30 years, which equals an average of 3,156,389 VCUs per year.

Based on the estimated cash flow, the cumulative net income (after covering core implementation and VCU developing costs) is strong over the Project's first 17 years, totaling just over \$USD 50 million. But the Project fails to break even on a cumulative basis until Year 9 of Project Activities without an upfront investment or other source of capital. However, the Project covers its costs from carbon revenue on an annual basis starting in year 6. If the Project can blend donor/grant funding with a private sector upfront climate finance investment, it should be able to make the Project cashflow positive and long-term financially sustainable on the sale of VCUs. An upfront climate finance investment would be paid back with discounted VCUs over the Project's first 1-4 verifications, and the investor would purchase forward VCUs from the Project.



Reed Buck in Kidepo Valley National Park- Uganda

Section 2 Jurisdictional Baseline Area and Project Area

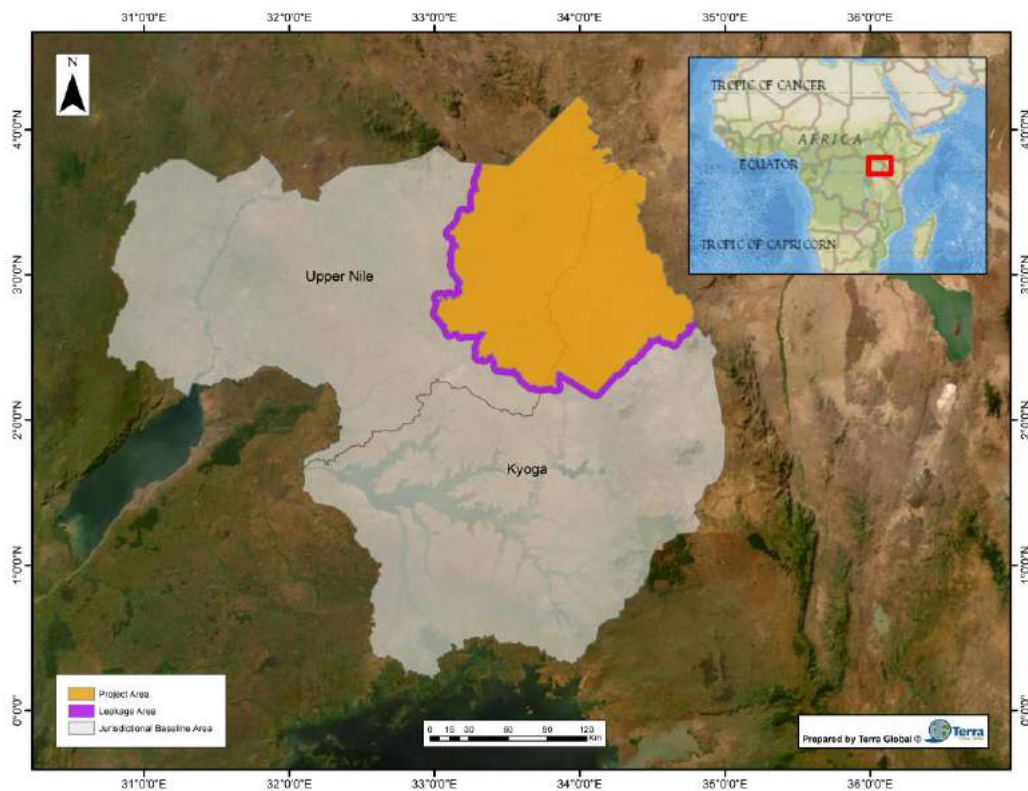


2. JURISDICTIONAL BASELINE AREA AND PROJECT AREA

This study was defined to focus on the Kidepo Valley Greater Landscape (Project Area) which is situated in the north-eastern corner of Uganda along the South Sudan, Kenya and Uganda border mostly in the sub-region of Karamoja and part of Acholi (Map 1). The Project Area totals 2,555,085 hectares and includes area in 13 districts: Kaabong, Kitgum, Agago, Kotido, Alebtong, Moroto, Pader, Abim, Napak, Karenga, Kapelebyong, Lamwo and Otuke. The Project Area is located across two government defined water management areas: Upper Nile and Kyoga. According to the National REDD+ Strategy these water management areas are the “administrative boundaries” that will be used for any subnational project. Thus, and for the purpose of this study both Upper Nile and Kyoga are considered the Reference Region which will be referred to this document as the Jurisdictional Baseline Area which totals 12,277,432 hectares (Table 1). Leakage area was assumed to be a 5 kilometers perimeter around the Project Area within the Ugandan boundary.

Table 1. Jurisdictional Baseline Area, Project Area, and Leakage Area

	Hectares
Jurisdictional Baseline Area	12,277,432
Project Area	2,555,085
Leakage Area	231,396



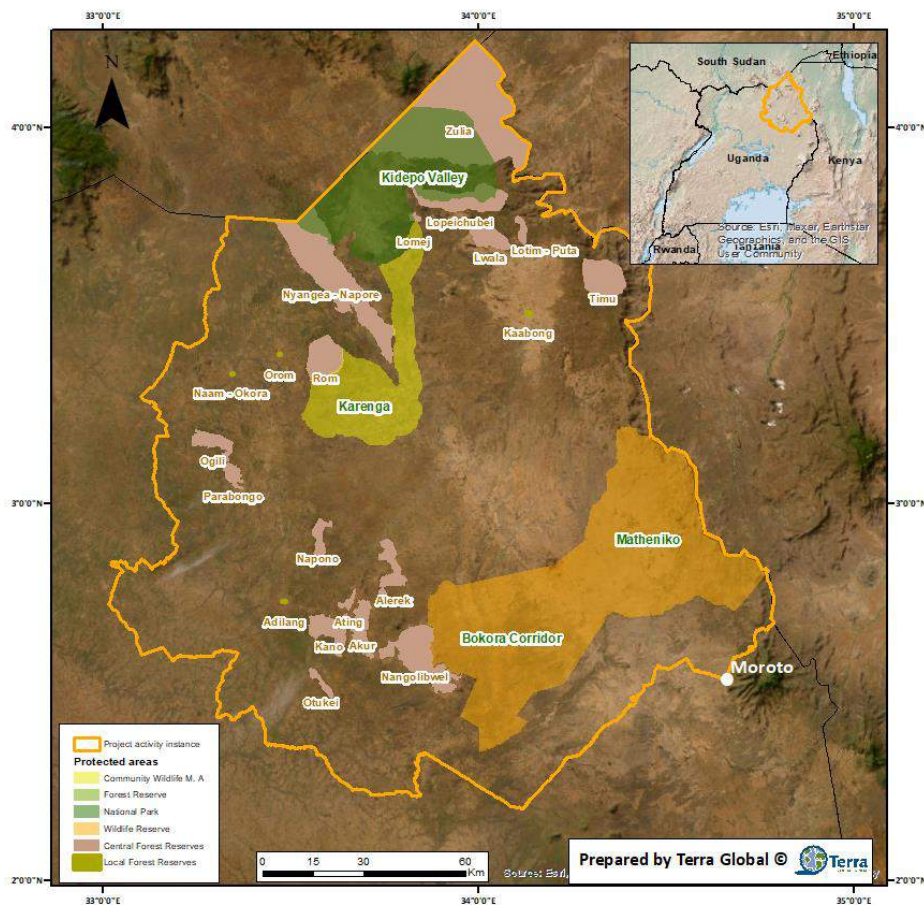
Map 1. Jurisdictional Baseline Area, Project Area, and Leakage Area in Kidepo Valley, Uganda

2.1. Protected Areas in the Project Area

Kidepo Valley Greater landscape is in the sub-basins of Kidepo river, Achwa river and Lake Kyoga. The Project Area encompasses a total of 25 protected areas: 21 Forest Reserves (17 Central Forest Reserves-CFR and 4 Local Forest Reserves-LFR), 2 Wildlife Reserves, 1 Community Wildlife Management Area (CWA) and 1 National Park (Map 2). In Table 2 a summary of the total Project Area inside and outside protected areas in Kidepo Valley Landscape.

Table 2. Total Size of Project Area

	Area (ha)	
Protected Areas	783,274	31%
Community Wildlife Management Area	94,481	4%
Forest Reserve	189,807	7%
National Park	142,017	6%
Wildlife Reserve	356,969	14%
Private Land	1,777,053	69%
Total Project Area	2,560,327	



Map 2. Protected Areas in Kidepo Valley, Uganda



Sunflower farm near Morungole Central Forest Reserve- Uganda

Section 3. Biophysical Information



3. BIOPHYSICAL INFORMATION

Uganda is a land locked country in East Africa, bordered by Kenya to the East, Tanzania to the South, Rwanda to the Southwest, Democratic Republic of Congo to the West and South-Sudan in the North. Uganda has a total area of 241,551 km², about 37,000 km² of Uganda is open water. Most parts of Uganda lie at an altitude between 990m and 1,500 m, except for the Western rift valley which is below and mountainous areas which are above the stated elevation range. The elevation and location of Uganda being close to the equator causes favorable rainfall and temperature for a diversity of fauna and flora and subsequently, human settlement and a variety of land use types (National Forestry Authority, 2009).

Uganda has a total population of around 47,123,533 (World Bank, 2021) with 3% growth since 2020. Over 80% of Uganda’s population is rural and depends on rain-fed agriculture, which is vulnerable to impacts of adverse effects of climate change (Josephat, 2018). Extreme poverty is concentrated in the north and east of the country, accounting for 84% of those living beneath the national poverty line.

Deforestation in Uganda is continuing at a rapid rate; the country has been losing on average 122,000 ha/year of forest every year from 1990-2015. This results in severe losses of ecosystem services (UN, 2018). On the other hand, on average, only about 7,000 hectares of planted forests have been planted on a yearly basis in the last 15 years. This imbalance can partly be attributed to weak institutions, uncoordinated policies’ implementation between different sectors of the economy, insufficient funding, and limited capacity at all levels which has undermined effectiveness and efficiency in developing and sustainably managing forestry resources in Uganda (Ministry of Water and Environment, 2015).

3.1. Climate

Uganda has a diverse climate influenced by the country’s latitudinal position, altitude, and topography. Seasonal movements of the Inter-Tropical Convergence Zone determine the general pattern of rainfall. Much of the country receives between 1,000 and 1,500 mm per year except in Karamoja in the northeast that receives 750 mm per year (Ministry of Water and Environment, 2015).

There are two main rainfall seasons in most of the country: the long rains in March, April and May and the short rains in October, November, and December. Generally, the seasonal pattern follows this bimodal system near the Equator and tends to a unimodal system with distance from the Equator. Inter-annual variability of rainfall correlates with the El Niño/Southern Oscillation (ENSO) phenomenon (Asadullah *et al.*, 2008). El Niño years are usually associated with above normal rainfall amounts in the short rainfall season (Indeje *et al.*, 2000). Some studies provide evidence that a bimodal rainfall regime dominates the south of Uganda, while a unimodal distribution is more apparent above 3° North (Komutunga and Musiitwa, 2001). In the Project Area rainfall varies between 660 and 1,100 mm per year (Nsubuga F. *et al.*, 2015) (Figure 1).

The mean temperatures vary from 18 to 20°C in the highlands of the south-west and eastern borders to 25–30°C in the rift valley and plains of northern Uganda (Ministry of Water and Environment, 2015).

Evapotranspiration exceeds rainfall in most months outside the rainy periods resulting in a pronounced dry season when soil water deficits are a major constraint to cropping (Gowing *et al.*, 2004).

3.2. Hydrology and Soils

The most prominent hydrological feature in Uganda is Lake Victoria, which is the second largest freshwater lake in the world and source point of River Nile Major rivers include the Nile, Ruizi, Katonga, Kafu, Mpologoma and Aswa. The rivers and lakes of Uganda are within the upper part of the White Nile Basin, except for those in the tiny North-eastern catchment of Kidepo, which drains into the Lake Turkana basin in Kenya. In the north-eastern part of the country, many of the water courses are seasonal (Nsubuga F. *et al.*, 2015).

Direct rainfall is the most important source of water resources in Uganda. Water and its availability have determined the local water resources, land-use potential, and population distribution. Despite Uganda's significant water resources, their spatial and temporal variability often renders many parts of the country water stressed over long periods of the year. Districts in the northeastern part of the country have the least per capita water availability (Nsubuga F. *et al.*, 2015).

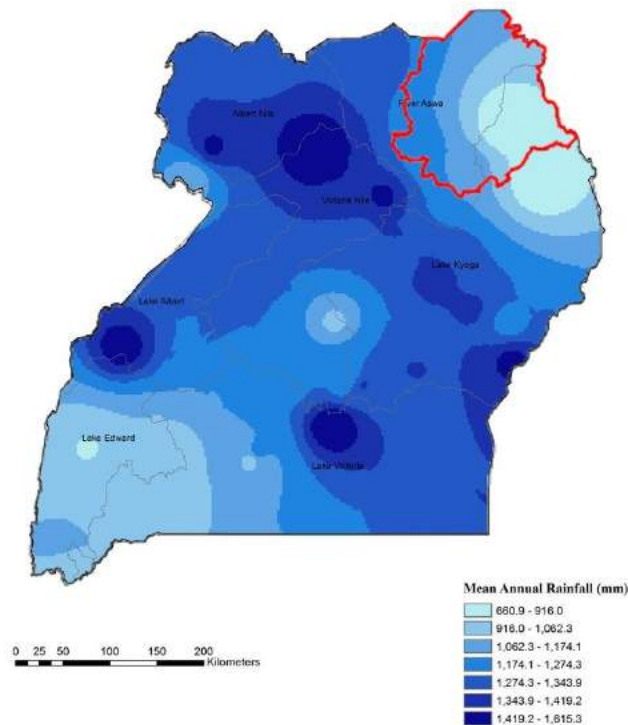


Figure 1. Mean Annual Rainfall (mm) in Uganda (Nsubuga F. *et al.*, 2015), Project Area in red.

With very few exceptions all the geological formations in Uganda are of pre-Cambrian age and consist of the Basement Complex system as the oldest, overlain in places by a succession of sedimentary strata which have undergone a variable degree of dynamo-thermal metamorphism. Those major geological formations are characterized by the presence of younger intrusive rocks mostly acidic and less commonly

basic. The youngest formations of Pleistocene to recent age are represented by the Kaiso Beds and sands, silt sands clays of alluvial or lacustrine origin (Radwanski, 1960).

The soils of Uganda may be divided into the two broad-groups of upland soils occurring on hill summits, slopes or pediments and lowland soils found in alluvial or lacustrine plains and in river valleys. The upland soils are free draining and the lowland featured seasonally fluctuating water content which causes impeded drainage conditions (Radwanski, 1960).

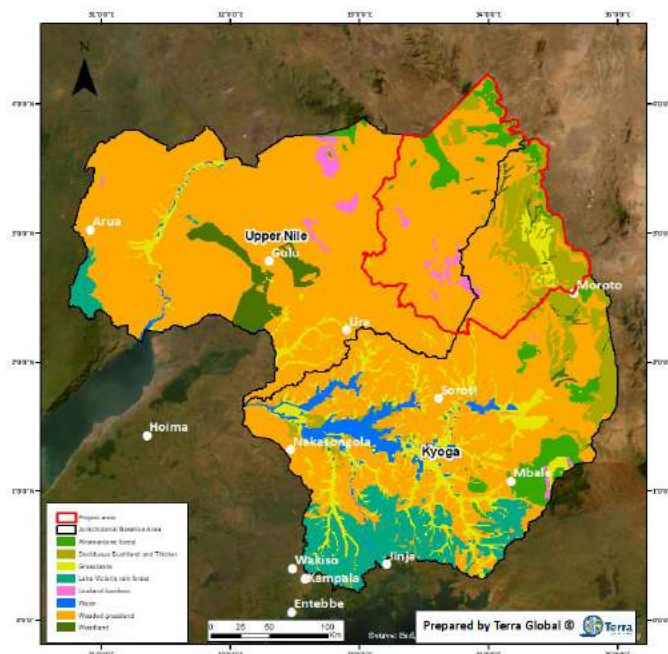
In the northeast of Uganda, the groups of soil are Ferruginous tropical soils (Jc), Eutrophic soils of tropical regions (Hc), Lithosols (Bd) and Vertisols (Dj) (Uganda Government, 1967).

3.3. Ecosystems

According to the Potential Natural Vegetation of Eastern Africa (van Breugel *et al.*, 2014) the Jurisdictional Baseline Area encompasses six main vegetations types: Afromontane Forest (Fb), Deciduous Bushland and Thicket (Bd), Wooded Grassland (Wd), Lowland bamboo (L) and Grassland (G) (Map 3 and

Table 3 provides a brief description of each potential natural vegetation type in the Kidepo Valley Greater Landscape Project Area. Actual land cover types are discussed in Section 3.4.



Table 3). Potential natural vegetation has been defined as the vegetation structure that would establish if all successional sequences were completed without interference by man under the present climatic and edaphic conditions, including those created by man (van der Maarel, 2005). This view of ecosystems serves as a practical approach to conservation and management of vegetation and species and can lead to a more informed interpretation of “real” landscapes.








Map 3. Natural Vegetation Types in Jurisdictional Baseline Area (van der Maarel, 2005).

Table 3 provides a brief description of each potential natural vegetation type in the Kidepo Valley Greater Landscape Project Area. Actual land cover types are discussed in Section 3.4.

Table 3. Natural Vegetation Types in Project Area

Vegetation Type	Description
	<p>Afromontane Forest (Fb)</p> <p>These forests occur mainly between 1200 and 2500 m on the slopes of certain mountains. Mists that frequently occur during the dry season may explain why is much less deciduous than lowland forests that receive similar rainfall. The subtype Fb refers to the Afromontane Forest dominated mainly by <i>Hagenia abyssinica</i>. The best-developed stands are clearly forest, but other stands have a structure that is better described as woodland or <i>scrub forest</i>.</p> <p>In the Project Area this type is in Kitgum, Karenga and Kaabong districts and its main fragments are within Nyangea – Napore, Zulia, Lwala, Timu, Lopeichubei Forest Reserves and Kidepo Valley National Park.</p>
	<p>Deciduous Bushland and Thicket (Bd)</p> <p>Bushlands are open stands of bushes (usually between 3 and 7 m tall) with a canopy cover of 40 percent or more. Thickets are closed stands of bushes (usually between 3 and 7 m tall) where the bushes are so densely interlaced that they are impenetrable - except along tracks made by animals. (White, 1983).</p> <p>Bd subtype refers to <i>Acacia-Commiphora</i> deciduous bushland and thicket which is the climax vegetation type over the greater part of the Somalia-Masai floristic region. It characteristically is a dense bushland of 3 to 5 m tall with scattered emergent trees up to 9 m.</p> <p>In the Project Area Bd are in Karenga, Kabong, Kotido y Moroto districts along the South Sudan and Kenya border.</p>

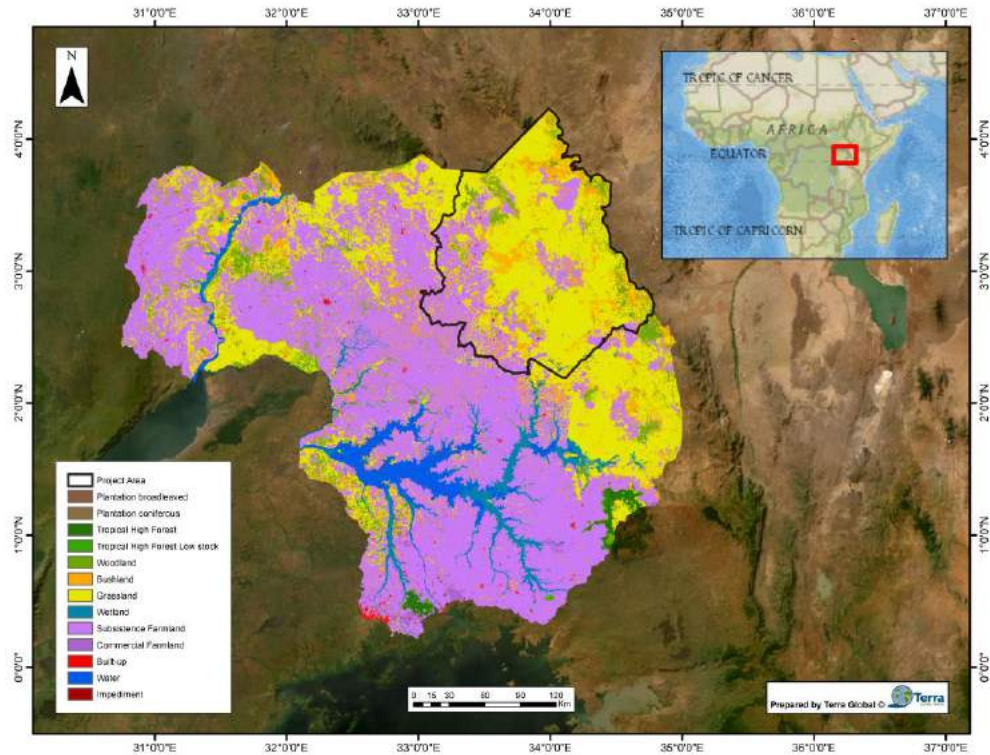
Vegetation Type	Description
	<p>Woodland (W)</p> <p>Woodlands are open stands of trees of at least 8 m tall with a canopy cover of 40 percent or more, but never with interlocking crowns and usually with a field layer of heliophilous grasses. Woodlands are of similar height as forests, but woodlands never have densely interlocking crowns. It characteristically is a dense bushland of 3 to 5 m tall with scattered emergent trees up to 9 m (White, 1983).</p> <p>Uganda’s Definition of forest allows to report and monitor woodlands that cover big parts of in central Uganda and some parts of north and north-eastern Uganda. This is in line with the UNFCCC guidelines which encourages choosing a definition of forest that will not exclude substantial forested areas of a country (Ministry of Water and Environment, 2018).</p>
	<p>Wooded grassland (Wd)</p> <p>Wooded grasslands are lands covered with grasses and other herbs with woody plants (trees ≥ 7 m tall, bushes 3 - 7 m, dwarf trees, palm trees or shrubs ≤ 2 m) covering between 10 and 40 percent of the ground. Woody plants nearly always occur scattered (White, 1983).</p> <p>Wc subtype refers to Combretum wooded grasslands which is the major East African wooded grassland vegetation type.</p> <p>This is the major vegetation type in the Project Area located along all districts.</p>
	<p>Grasslands (G)</p> <p>Grasslands are defined as lands covered with grasses and other herbs and where woody plants do not cover more than 10% of the ground (White, 1983).</p> <p>In the Project Area grasslands are located mainly in the Moroto district.</p>

Vegetation Type	Description
	<p>Lowland bamboo (L)</p> <p><i>Oxythenanthera abyssinica</i> is one of the four bamboo species (giant grasses of 2 - 20 m or even taller with erect woody stems that persist for several years) that are indigenous to Africa.</p> <p>In the Project Area these are located mainly in Abim and Agago district. Bamboo is considered a special tree under REDD+ and Uganda’s national interests²</p>
	<p>Lake Victoria rain forest (Fi)</p> <p>The Lake Victoria regional mosaic consists of floristically impoverished variants of the characteristic vegetation types of the Guineo-Congolian, Sudanian, Zambebian and Somalia-Masai regional centers of endemism, sometimes with an admixture from Afromontane species.</p> <p>In the Project Area this vegetation type is not present.</p>

3.4. Land Cover and Land-Use

The National Biomass Study (which also includes land-cover information) provided by NFA was used to assess land use and land cover-LULC in the Jurisdictional Baseline Area and in the Project Area. This study used Landsat imagery for land cover mapping and stratification. For most of the land cover types, the cartographic mapping scale was at 1:50,000. The latest information available was from 2017. Map 4 shows the land cover types in the Project Area and Jurisdictional Baseline Area which includes both Upper Nile and Kyoga Water Management Areas.

² A minimum area of 1 Ha, minimum crown cover of 30% of trees able to attain a height of 4 meters and above (Mintiry of Water and Enviroment, 2017).



Map 4. Land Cover in Jurisdictional Baseline Area (NFA, 2017)

Table 4 lists the area for each land cover type within the Jurisdictional Baseline Area.

Table 4. Landcover in the Jurisdictional Baseline Area (NFA, 2017)

Land Cover Type	Area (ha)	
	2015	2017
Subsistence farmland – mixed farmland, small holdings in use or recently used, with or without trees	5,964,062	6,188,782
Grassland – rangelands, pastureland, open Savannah; may include scattered trees shrubs, scrubs and thickets	3,357,951	3,385,964
Bushland - bush, thickets, scrub (average height < 4m)	1,212,597	999,144
Woodland – trees and shrubs (average height > 4m)	615,813	596,741
Wetlands – wetland vegetation; swamp areas, papyrus, reeds, grass and other sedges	428,480	456,948
Open water – Lakes, rivers, dams and ponds.	358,440	399,728
Tropical High Forest (THF) – normally Stocked	82,632	77,405
Commercial farmland – mono-cropped, large scale, non-seasonal farmland usually without any trees for example tea and sugar estates	146,133	58,313
Built up area – Urban or rural built-up human settlements, large infrastructure, quarries	62,621	64,523
Tropical High Forest (THF) – Low stock degraded/encroached	22,270	20,446
Plantations and woodlots – coniferous trees ("Softwood")	12,447	13,261
Plantations and woodlots – deciduous trees/broadleaves ("hardwood")	9,782	11,926

Land Cover Type	Area (ha)	
	2015	2017
Impediments- Bare rocks, bare soils and sand	2,189	2,234
No data	2,015	2,017
Total Forest Area	742,944	719,779
Total Non-Forest Area	11,171,844	11,153,674
Total Excluded Area	362,644	403,979
TOTAL AREA	12,277,432	12,277,432

Information provided in Table 4 shows that the predominant land cover type in the Jurisdictional Baseline Area is subsistence farmland, followed by grassland. Woodland and Tropical High Forest areas instead show an overall decrease. Plantations and woodlots show some increase in the 2015-2017 period.

Table 5 shows land cover types between 2015 and 2017 within the Project Area. The predominant land cover type in the Project Area is grassland followed by subsistence farmland. Woodland areas show an overall decrease between 2015 and 2017. This trend is like the jurisdictional baseline area.

Table 5. Landcover in the Project Area (NFA, 2017)

Land Cover Type	Area (ha)	
	2015	2017
Grassland	1,247,686	1,424,445
Subsistence farmland	504,933	575,391
Bushland	605,197	384,171
Woodland	184,506	160,165
Wetlands	5,738	5,717
Built up area	4,668	4,680
Impediments	1,080	230
Open water	24	193
Commercial farmland	1,214	57
Plantations and woodlots broadleaves	39	35
Plantations and woodlots coniferous	-	-
Tropical High Forest	-	-
Tropical High Forest Low stock	-	-
Total Forest Area	184,545	160,200
Total Non-Forest Area	2,363,698	2,388,744
Total Excluded Area	6,842	6,140
TOTAL AREA	2,555,085	2,555,085

Bush lands refers to vegetation dominated by bush, scrub and thicket growing together as an entity, but not exceeding an average height of 4 meters. Bush. This land cover class can occur naturally as a climax on its own but in many cases occur because of forest or woodland degradation. Further ground truthing in the Project Area during the carbon development phase could show that some of these bushland areas are in fact degraded woodland.



Kidepo Valley National Park-Uganda

Section 4. Relevant Laws and Policies



4. RELEVANT LAWS AND POLICES

At national level, the Constitution of Uganda 1995 is the principal law and a framework for different laws. The constitution has sections constituting the acts of parliament that operationalize the constitution. In other words, the act is an expansion of the constitution, in the hierarchy. Below the act is the regulation which further simplifies the information in the act. The regulation can be further simplified into guidelines. Apart from laws, there are also policies. A Policy is a lawful administrative execution guideline on a specific issue. It must be backed by laws. Table 6 summarizes the main laws and policies in this hierarchy and other relevant land laws, at national, regional, and international levels.

Table 6. Relevant land laws in Uganda

National legal framework	
Constitution of Uganda 1995	The 1995 constitution of Uganda states that “Land in Uganda belongs to the citizens of Uganda and shall vest in them in accordance with the land tenure systems provided for in this Constitution”
The land act 1998 was amended in 2004 and 2010.	Subject to the Constitution of Uganda 1995, the land act 1998 provides for land holding, control of land use, and land management in Uganda. The act provides for the three land tenure systems: i) Customary, ii) Mailo, iii) Freehold, and iv) Leasehold.
The Uganda National Land Policy 2011 (Ministry of Lands and Development 2011)	This policy guideline addresses issues arising from historical injustices and colonial legacies, land use, and land management issues. The policy is backed by relevant land laws.
National Land Use Policy, 2016	This policy provides a legal and administrative framework for the technologies of optimal use of land and other natural resources in a sustainable manner.
Registration of Titles Act, 1924 (Cap. 230)	In line with the tenure systems defined in the land act 1998, the registration of Titles Act 1924 (Cap. 230) act provides for land legal ownership and dealings with land transfers. It provides rules for registration, certification, and rectification of land titles, and for the lease of land, mortgage, and other legal actions matters regarding land. The act defines the different forms of certificates of title.
Land Acquisition Act, 1965 (Cap. 226)	This Act provides a procedure for the State to acquire land for public activities. The Minister may declare a specific land public land, for a public purpose, either temporarily or in perpetuity.
Forestry policy 2001	In Uganda, policy changes have occurred in recent decades – including a reform of the forest policy (MWE 2001), in response to the rising pressure on the environment. The forest policy reform in Uganda allowed the devolution of restoration activities of state-owned degraded natural forests.
National Forest and Tree Planting Act, 2003	This act came into existence because of the forest reform in 2000, which allowed the devolution of forest management. National Forest and Tree Planting Act, 2003 operationalizes Uganda Forestry Policy 2001 (MWE 2001) and mandates the NFA to manage forests gazetted by the national parliament as Central Forest Reserves (CFRs).

National legal framework	
National Environmental Management Policy, 1995	The National Environmental Management Policy (NEMP) aims to address environmental issues including climate change issues, soil degradation, deforestation, loss of biodiversity, increasing pollution, and environmentally related diseases in a comprehensive and integrated approach. To operationalize this aim, the NEMP creates a National Environment Management Authority, -a legal framework for an effective monitoring and evaluation system to track the effects of different policies on the environment.
National Environment Act, 2019	This Act provides for the protection of the environment in Uganda generally and particularly provides a response system for environmental laws for addressing emerging environmental issues- including climate change. The act affirms the National Environment and Management Authority (NEMA) as the institution of overseas environmental matters in Uganda and establishes law enforcement -the Environmental Protection Force that mostly employs the command approach of environmental enforcement.
Uganda Wildlife Policy, 2014	This Policy provides a sectoral framework for all institutions and stakeholders in wildlife conservation to operate to sustainably conserve and develop the wildlife resource base. The key focus is on human-wildlife conflicts, illegal wildlife trade, and trafficking, oil and gas co-exist with conservation, research and conservation education, community benefits from conservation, and private sector enterprises in wildlife conservation.
Uganda Wildlife Act, 2019	This Act provides for the conservation and sustainability of wildlife in Uganda and affirms the existence of the Uganda Wildlife Authority and other institutions involved in wildlife conservation and management.
National Climate Change Policy, 2015	In fulfillment of Uganda’s National Development Plans (especially 2010–2015 and 2016-2021) and the Country’s vision 2040 this policy guides all climate change activities and interventions in the country. The policy provides for harmonized and coordinated approach towards a climate-resilient and low-carbon development path through a green economy, for sustainable development, with all stakeholders employing climate change mitigation measures,
National Climate Change Act, 2021	This Act enforces the law for Uganda to participate in climate change response measures, in line with the United Nations Framework Convention on Climate Change, the Kyoto Protocol, and the Paris Agreement. The act sets out a framework for institutional arrangements to guide the Government in the planning, budgeting, and monitoring of climate change programs. the act sets the conditions under which a project proponent may participate in climate change mitigation activities and provides for the criteria for measuring emissions - verification of information by registered verifiers, financing of climate change-related activities (e.g., grants for research, loans, and incentives for implementation of actions) by the Minister responsible for finance while recognizing vulnerabilities and adaptation to the impacts of climate change.
Local Governments Act, 1997 (Cap. 243);	This Act streamlines local governments with the Constitution and aims at decentralization and devolution of functions, powers, and services. Under the Local Government Act, Chapter 243 the local government councils have legislative

National legal framework	
amended in 2013 and 2015	powers to enact ordinances and bylaws to help effective implementation of government programs, national policies, and laws. Under this act, the district councils have the power to formulate ordinances while the lower local governments have the power to formulate bylaws. Some of the bylaws related to natural resources include the bushfires bylaw, grazing bylaws, bylaws on charcoal production and trade, and resolutions banning massive charcoal production and transportation.

Table 7. Regional and International Agreements

Regional and International Agreements	
The East African Climate Change Policy, 2010	Uganda is a partner state in the East African Climate Change. The policy (in Section 3.2) calls for designing favorable policy instruments and transportation to utilize some of the emerging environmental markets -including REDD+.
United Nations Framework Convention on Climate Change (UNFCCC), 1992	The UNFCCC is the main global forum for climate change negotiations and aims to combat harmful human-induced climate system interference. The UNFCCC asks for commitments from all parties to conservation, sustainable management, and enhancement of sinks and reservoirs of all GHGs in the county. Uganda is a party of UNFCCC.
Kyoto Protocol, 1997	Following the UNFCCC (under Article 4), the Kyoto Protocol operationalizes the United Nations Framework Convention on Climate Change. Kyoto uses a differentiated approach- recognizing that developed countries are largely responsible for the current high levels of GHG emissions in the atmosphere and binds them to commit to limiting and reducing greenhouse gas (GHG) emissions in accordance with agreed individual targets.
Uganda's Intended Nationally Determined Contribution (INDC)	Uganda's Intended Nationally Determined Contribution (INDC) is a policy document focusing on the multi-sectoral approach to greenhouse gas reductions at the national level, from 2015 to 2030. According to this policy, the estimated potential cumulative impact of the policies and measures of mitigation contribution for Energy, Forestry, and Wetlands could result in an approximately 22% reduction of national greenhouse gas emissions in 2030 compared to business-as-usual.
Paris Agreement, 2015	Article 5(2) of the Paris Agreement is applicable to Uganda where the country positions deforestation and forest degradation as the most efficient and effective means of mitigating land-induced climate change, through performance-based incentives to landowners. Since the completion of the readiness phase in 2021, Uganda has embarked on REDD+ and progressed to more advanced phases in line with the Paris Agreement, of 2015.

In terms of international obligations, the government of Uganda is a signatory to several international agreements and conventions including the Ramsar Convention on Wetlands, 1971, the International Convention on Biological Diversity, 1992, the Convention to Combat Desertification, 1994; and more recent obligations focusing on climate change mitigation. The United Nations Framework Convention on

Climate Change (UNFCCC) 1992, Kyoto Protocol 1997, and the Paris Agreement, 2015 are the direct origin of the recent legal developments in Uganda to tackle the climate changes issues. Particularly, the National Climate Change Policy (2015), and the resulting National Climate Change Act, of 2021 articulate the country's policy priority on REDD+ and other REDD-like activities aimed at a joint approach of reducing deforestation and forest degradation, while ensuring livelihood sustainability.

In line with international obligations, policy and institutional changes have occurred in recent decades, including a reform of the forest policy (MWE 2001). The forest policy reform in Uganda allowed the devolution of restoration activities of state-owned degraded natural forests as a response to the rising pressure on the forest and other environmental resources. The current Uganda Forestry Policy 2001 provides directions for sustainable development of the forestry sector and provides for key international obligations which affect the forestry sector and to which Uganda is party and incorporated recent advances in principles and standards for sustainable forest management that have been widely adopted internationally in recent years (Ministry of Water and Environment, 2015).

4.1. Land Tenure Types and Status

Land tenure in Uganda can be classified in two broad categories. The first category is in terms of the bundle of rights held, as either owned in perpetuity or leasehold. The second category of land ownership in Uganda is in terms of institutional arrangement; as private, public, or government (Ministry of Lands, Housing and Urban Development, 2013).

4.1.1. Land tenure classified in terms of the bundle of rights.

Under this classification, the land act 1998 (Subject to the Constitution of Uganda 1995) provides four types of land tenure systems.

Mailo

Mailo tenure is a system that was established in 1900 by the British colonial government to reward colonial agents who advanced British interests in many regions of Uganda. This system is most common in the Central Region. Although considered a secure tenure system, it's notable that much of the land mailo systems are used by mailo tenants who are restricted in their user right of tenure on the land they operate on.

Freehold

In the Freehold tenure system owners of the land have a title to their land which allows them to hold the registered land in perpetuity. The landowner is given complete rights to use, sell, lease, transfer, subdivide, mortgage, and bequeath the land as they see fit, so long as it is done in a manner consistent with the laws of Uganda.

Leasehold

In the leasehold tenure system, the owner of the land grants the tenant exclusive use of the land, usually for a specific period. Land may also be leased from the state to individuals for typical lease periods of five, 45, or 99 years. In return, the tenant usually pays an annual rent or service under specified terms and conditions. Leaseholders may or may not hold formal contracts with the owner.

Customary

In customary tenure, access to land is “governed by the customs, rules, and regulations of the community.” Holders of land under the customary system do not have a formal title to the land they use but generally have secure tenure. A typical feature that differentiates customary land from other land tenure systems is that both formal and cultural land-management systems operate concurrently under customary land, in a way that, cultural institutions hold the central role of land matters. Holders of land under the customary system do not have a formal title to the land they use but generally have secure tenure. The Uganda National Land Policy, 2013 (Subject to the Constitution of Uganda 1995) provides for customary landholder can obtain a certificate of Customary Ownership in three different ways: By registering through traditional institutions on behalf of communities; By converting customary land (if already privatized and by individualized) into freehold tenure; by forming Communal Land Associations for ownership and management customary land. Customary tenure system covers most of the Ugandans’ land holding.

4.1.2. Land tenure classified in terms of institutional arrangement.

Under this classification, for forest resources, the 1995 constitution allows citizens to own and use the land under any of the above four tenure systems for forestry purposes. However, the Constitution also states, ‘the Government or a local government as determined by Parliament by law, shall hold in trust for the people and protect, natural lakes, rivers, wetlands, forest reserves, game reserves, national parks, and any land to be reserved for ecological and touristic purposes for the common good of all citizens”.

Uganda’s forests are estimated to be about 1.8 million ha. Out of the estimated 1.8 million ha of forests and woodlands, 38% is on private land while about 62% is managed by the government.

Since the forest policy reform in 2000 (MWE 2001), and the operationalization National Forestry and Tree Planting Act of 2003, all forests in Uganda were reclassified as follows:

- Central Forest Reserves (CFR)
- Forests under national parks (including Wildlife Reserves and Wildlife Sanctuaries)
- Local forest reserves
- Community forests
- Private forests

For private land in Karamoja and Acholi sub-regions (Project Area Project) the tenure system is purely customary (Ministry of Lands, Housing and Urban Development 2013), and this is split between household (e.g., for agriculture and settlement) and communal land (e.g., communal grazing land centrally owned and managed and shared by clan members). The initial stock of household land is mainly inherited from parents when a man gets married, usually demarcated by live markers e.g., by trees or a bush strip. There are no fixed boundaries between the household gardens and communal grazing land in most cases, communal grazing land can be converted to household gardens. In communal lands, access rights are mainly based on clan membership.

In recent years, customary landowners -especially in Karamoja sub region, have started the land registration, including transforming customary tenure into individualized land. From discussions with stakeholder, also confirm(Rugadya & Kamusiime, 2013) two main motivations for communities' land registration: One, the state of mining in Karamoja is described as stealthy, due to the absence of information from the government on the mining activities and the communities feel they need tenure security. Second, there were claims that part of their ancestral land is being demarcated as part of the gazetted areas. However, the process of land registration is still new - mostly in urban centers and town councils and has not covered larger parts of the region (Rugadya & Kamusiime, 2013).

For public land, three government agencies are responsible for managing forests on government land: the National Forestry Authority (NFA), the District Forest Services (DFS), and the Uganda Wildlife Authority (UWA).

Mandated by the National forestry and tree planting act, the NFA manages forests gazetted by the national parliament as Central Forest Reserves (CFRs). Uganda Wildlife Authority (UWA) manages all forests found inside national parks, Wildlife Reserves, and Wildlife Sanctuaries and guides the management of CWA and wildlife outside protected areas. In other words, UWA's role in - for instance, hunting or community wildlife management area is purely wildlife, but UWA does not own the land outside protected areas. The District Forestry Services (manages Local Forest Reserves (LFRs), and, together with the NFA, is responsible for providing technical support to private/community forests. The CFRs, LFRs, national parks, and wildlife reserves (including forests inside them) form a network of protected areas.

4.2. Legal Ability to Clear for Agriculture

Under the Forestry policy 2001, in Uganda, the conversion of forest areas to agriculture is prohibited in protected areas. However, the governance of forests on private land remains relatively weak in Uganda. While the legal requirement asks private forest owners to seek approval of District Forest Officers before clearing any trees or their own land, this is not practically enforced on the ground. As such, the conversion of forests to agriculture goes on unsupervised, leading to massive deforestation.



A traditional Dodoth homestead in Karenga District- Uganda

Section 5. Communities and Stakeholders



5. COMMUNITIES AND STAKEHOLDERS

5.1. DESCRIPTION OF COMMUNITIES IN THE PROJECT AREA

The Project Area cuts across four sub-regions in Acholi (Kitgum and Agago districts), Karamoja (Abim, Karenga, Kaabong, and Kotido Districts), Lango (parts of Otuke), and Teso (parts of Kapelebyong). However, for this feasibility study this section focuses on the Acholi and Karamoja communities, the main part of the Project Area.

The districts of Abim, Karenga, Kaabong, and Kotido districts are mostly inhabited by the Karamojong - an umbrella term consisting of a number of ethnic groups or sub-tribes such as the Dodoth (North), the Jie (Central) and the Bokora, Matheniko, and Pian (South), and smaller ethnic groups such as the Tepeth, Nyakwe, Ik, Ngipore and Ethur (Powell, J., 2010). The Karamojong are recognized in the international human rights community as part of the Indigenous People of Uganda (IWGIA, 2017). Unlike other Indigenous groups in Uganda who are minority groups with smaller populations, the Karamojong constitute the majority of Karamoja's population, with smaller minority sub-groups (e.g., the IK) under the Karamajong umbrella (Mitchell, 2022).

Unlike the Karamajong umbrella group, the communities in Kitgum and Agago predominantly constitute one tribe (the Acholi) and are part of Luo-speaking Nilotic people of East Africa covering the districts of Agago, Amuru, Gulu, Kitgum, Nwoya, Lamwo, and Pader; and Magwe County in South Sudan and northwestern Kenya (Doom, 1999) The Uganda's Acholi people are said to have migrated south to northern Uganda from the area now known as Bahr el Ghazal in South Sudan along the Nile River in Southern Sudan in the sixteenth century and settled in different parts of East Africa, including Pubungu near Pakwach (Atkinson, 1989). Other theories have traced their origin to intermarriage between the Luo and Madi people.



Figure 2. Family collecting sorghum in Karenga District

More recent migrations have also occurred in the area. Since Uganda’s independence, there has been slow emigration, with Kitgum and Agago populations spreading to the West Nile area. Insecurity in Southern Sudan forced Sudanese to migrate to different parts of Uganda including Kitgum and Agago. This refugee occupancy also created another movement. Some host communities moved to the Pader side, but these have since returned to re-occupy their home areas.

In terms of cultural setting, both the Luo /Acholi in Agago and Kitgum; and the Karamajong in Abim, Karenga, Kaabong, and Kotido districts are historically characterized by the formation of chiefdoms headed by clan leaders (Uganda Bureau of Statistics (UBOS), 2022). Among the Luo people, the Rwodi (Rwot, in singular) was the central social and political figure in the chiefdom since pre-colonial times. Before colonialism, the Acholi kingdom was composed of kaka (clans), each headed by a Rwot Moo (anointed chief) from a royal clan, and each Rwot Moo was supported by a Council of Elders, with the main function of guiding communities, solve disputes and create peace and unity. Under the British colonial administration, the Rwot Moo was replaced by the Rwot Kalam (educated men who served the colonial administration), but the Rwot Moo continued to exercise free, informal, cultural leadership among its people. At independence, the Rwot Kalam system was dismantled, but also the Rwot Moo remained officially unrecognized in the Ugandan Constitution until 1995, (although the Elders and Rwot Moo continued to play important cultural roles among their people). Due to the long civil war in the entire Northern region (Acholi in Agago and Kitgum inclusive), many of the values in society have been destroyed. Conflict in Northern Uganda further weakened both Rwodi and the Councils of Elders. Like the rest of the population, Rwodi and Elders were forced to leave their homesteads and live in Internally Displace Person (IDP) camps. As noted during an in-depth discussion with key stakeholders in Kitgum local government, the spirit of communalism that characterized the Acholi domains in the past has been replaced with that of individualism.

5.1.1. Project Area Demographics

In terms of population, the districts in the Project Area are relatively low in population and population growth rate. Table 8 shows the districts’ population, population growth rate (2002 -2014), and average household size, according to the latest national census conducted in 2014 (Uganda Bureau of Statistics 2016). (Uganda Bureau of Statistics (UBOS), 2022). The table included the population most proximate to forests. These are 39 sub counties in five districts of Abim, Agago, the greater Kaabong (which includes Karenga), Kitgum and Kotido.

Table 8. Population, households, and growth in the Project Area

District/Subcounty	Population	Annual Population Growth rate (%)	Average Household Size	Number of Households
Abim	91,639	6.1	5.92	15,317
Abim	12,496		5.8	2,114
Alerek	17,615		6.2	2,821
lotukei	23,348		6.5	3,529
Morulem	23,204		5.5	4,165
Nyakwae	14,976		5.6	2,688
Agago	189587	1.8	5.275	36,037

District/Subcounty	Population	Annual Population Growth rate (%)	Average Household Size	Number of Households
Adilang	20,431		5.3	3,846
Arum	11,778		5.2	2,244
Kotomol	12,120		4.8	2,541
Lapono	22,193		5.5	4,063
Lira Palwo	16,126		4.7	3,452
Lokole/Lukole	15,992		5.5	2,931
Omiya Pacwa	11,735		5.5	2,133
Omot	13,555		5.1	2,674
Paimol	20,803		5.4	3,882
Parabong	11,901		5.7	2,091
Patongo	11,226		5.1	2,212
Wol	21,727		5.5	3,968
Kaabong (includes Karenga)	157,731	-1.6	5.6	27,433
Kaabong East	10,113		6.2	1,627
Kaabong West	13,402		5.7	2,353
Kalapata	25,253		6	4,152
Kamion	6,225		5.3	1,170
Kapedo	14,580		5.6	2,576
Kathile	21,123		5.9	3,569
Kawalakol	14,169		6.4	2,210
Lobalangit	7,706		5.4	1,416
Lodiko	6,389		4.9	1,294
Lolelia	7,390		5.3	1,399
Loyoro	3,607		5.1	676
Napore (Karenga)	14,975		5.8	2,521
Sidok	12,799		5.2	2,470
Kitgum	77,689	1.7	5.4	14,324
Lagoro	15,703		5.5	2,868
Namokora	14,040		5.2	2,698
Omiya Anyima	20,810		5.4	3,840
Orom	27,136		5.5	4,918
Kotido	164,919	3.3	6.48	24,020
Kacheri	30,367		5.9	5,129
Kotido	33,607		6.7	4,849
Nakaperimoru	23,394		6.1	3,427
Panyangara	40,574		6.7	5,622
Rengen	36,977		7	4,993
Total	681,565	2.7	5.4	117,131

In terms of education and literacy, 65.5 % of the entire Karamoja population aged 15 years and above have no formal education and has the smallest proportion of literate people in the age group of 10 years and above, and among adults (25%). The education level is somehow better in Acholi where 46.3% of the

population have some primary level of education; but at the secondary level, both Acholi (13%) and Karamoja (19%) regions have the lowest secondary enrollment in Uganda.

The population's low levels of education lead to unskilled employment and other forms of subsistence activities. In, most of the working population (69.8%) are either employed as casual laborers in agriculture, forestry, and fishing enterprises, or in subsistence agriculture (28.5%). Traditionally, the Karamojong are livestock herders primarily and crop production as a secondary activity. Due to the arid climate of the region, the Karamojong have traditionally practiced a sort of pastoral transhumance, where for 3–4 months of the year, they move their livestock to the neighboring districts in search of water and pasture for their animals. In recent decades, there have been efforts to promote sedentarism through agropastoral livelihoods (Mitchell, 2022). Under this, Karamoja sub-region is partitioned in three livelihood zones: the semi-arid pastoral zone in the east, the agropastoral zone in most of Central Kaabong, Kotido, Central Moroto, and Central Nakapiripirit; and the wetter agricultural zone in the west. However, with limited availability of water, the sub-region has always been a concern to the entire country – affecting both the Karamojong and their interaction with neighboring ethnic groups. Also, the employment levels in Karamoja are quite low; the sub-region has the highest dependency ratio in Uganda (124 per 100 working-age population), possibly linked to the high proportion (65%) of female headed households (Uganda Bureau of Statistics (UBOS), 2022).

While both the Karamoja and Acholi sub regions have the largest share of households under the subsistence economy (66.3% and 78.0%, respectively), there are sub-regional differences in the nature of the economy, that put Acholi in a better position. Unlike the Karamojong engagement in Agriculture for wedges³ (over 40%), the Acholi's majority (80 %) are engaged in subsistence agriculture. Although in terms of income, the two sub-regions have the highest share of households (Uganda) under poverty, where Karamoja (including in Karenga, Kaabong, and Kotido districts have 0.657 and Acholi 0.677. Also, the two regions have the lowest monthly income (Karamoja (including in Karenga, Kaabong, and Kotido Districts SHS 99,000, and Acholi Agago and Kitgum UGX 105,000), after the Lango sub-region. This deterred progress in development can be linked to the distinct social, cultural, and economic factors present in the two regions.

5.1.2. Conflict in the Project Area

Dating back to the colonial period, Karamoja has faced severe marginalization and conflict. With a long-standing historical intercommunal cattle raid, proliferation of arms and violence (ACHPR & IWGIA, 2009), the districts in Karamoja have been at logger heads with neighboring populations in Kenya, Ethiopia, and Sudan, in addition to intra-clan conflicts within the Karamoja cluster. Although, the situation has recently improved, since government disarmament campaign in 2006, there is still cross border migration of armed pastoralist (Uganda Bureau of Statistics (UBOS), 2022).

³ Wedges refers to payment for casual labor mainly in farms not owned by the household.

The situation is not different in Acholi. Before the insurgence, the Acholi people were prosperous and predominantly agriculturalists practicing subsistence farming alongside animal husbandry as a major source of livelihood. The Acholi people were prosperous and self-sufficient during this period.

Since 1986, the Acholi land has been a scene of conflict, from different insurgency groups, the most destructive being the Lord's Resistance Army/Movement (LRA/M) of Joseph Kony which forced the people to seek refuge in IDP camps for close to two decades (Omach, 2021). The IDP (Internally Displaced Persons) camps had some of the highest mortality rates as a result of Malaria and AIDS raids by both LRA and government forces. With two decades of violent conflict and brutal counter-insurgency operations left northern Uganda socially, economically, and politically broken, and increased the historical marginalization of the region.

The situation is even exacerbated by the human-wildlife conflicts—mostly in the wildlife corridors from the UWA managed Kidepo National Park. Stakeholder discussions during field work indicate that human-wildlife conflict is a serious issue in the area. “Communities in this area are very frustrated, almost giving up on cultivation because whatever is grown is damaged by the wild animals”, making the whole enterprise of agriculture difficult.

The low household income, insecurity, and limited livelihood opportunities in the two sub-regions also impact negatively on forest and other environmental resources. For instance, many homesteads in Karamoja (83%) and Acholi (78%), are grass thatched, with Poles & Mud walls in Karamoja (85%). In addition, the two sub-regions rely heavily on firewood, both for cooking (88%) and lighting (44%) in Karamoja, and for cooking in Acholi (78%). The level of reliance on forest resources also varies within the areas. Discussions with different stakeholders in Karamoja indicate that the minority group are some of the communities that rely on forests primarily, and agriculture secondarily. In the Acholi sub-region, the refugee communities (Lamwo camp) impact negatively on natural resources (e.g., increasing the demand for firewood).

5.2. COMMUNITY AND INSTITUTIONAL STRUCTURES

To implement the proposed Program, different Civil Society Organizations, Non-Governmental Organizations (NGOs), private, state organizations and community institutional actors have been identified.

5.2.1. Associations/Cooperatives

There are various community groups, mostly related to farming, beekeeping, saving and credit activities, with the goal of advancing the wellbeing of their members. Under National Agricultural Advisory Services (NAADS), several enterprises were identified using a participatory rural appraisal, and most of the agricultural-based enterprises are in line with these enterprises.

The District Community Development offices have a database for all the groups (although some are not legally registered). For instance, only three groups are registered as CBOs/associations/Cooperatives in the Karamoja district. Some groups are being supported by the district's local government, and there are also NGOs working with other local groups.

Some of the formally registered groups in the Project Area include the CFM groups which are currently co-managing CFR with NFA, members of the community conservancy-covering the districts of Kaabong, Kotido Abim, Kitgum, Karenga, and Agago (KKAKKA CWA), and community wildlife scouts (CWS) members who volunteer to guard crops and livestock maintaining barriers to prevent wildlife raids. Among the three groups (CFM, KKAKKAA CWA, and the scouts) the CFM groups are better positioned, in terms of further engagement in natural resources management, while the KKAKKAA CWA and CWS members are key in engagements and negotiations. While the KKAKKAA CWA and wildlife scout members focus on wildlife community co-existence, the CFM groups are more focused on forest protection and sustainable use, and enhancement of alternative income-generating enterprises at the household level.

The main challenge is many groups, both the CBOs and unregistered groups, is that they do not have the organizational and financial capacity to implement planned activities and long-term plans. However, through support from international NGOs, some committed organizations can organize themselves and access financial, technical, and organizational support to implement planned interventions.

Unlike NGOs, most CBOs operate at a sub-county level and below. With this geographical limitation, CBOs have a niche within a community of operation which promotes community activities in a specific geographic locality. The CBOs and NGOs working in each district are coordinated under the NGO forum, under the supervision of the district community development officer.

5.2.2. Community Resource Management Areas

Community Resource Management areas may take different forms depending whether the resource is located on government protected areas (including forest reserves) or on private land. The concept of a community-based forest management and its associated variants have existed in Uganda, dating back to the pre-colonial era when land resources were governed by customary norms and practices that were unique to each community (Gombya-ssembajjwe et al., 2001).

However, following the decentralization reforms promoted in the 1995 Constitution, the forest sector has adopted two innovative approaches to involve local community members in forest management since the late 1990s, the Collaborative Forest Management (CFM) and Community Forestry (CF) (GoU, 2003-Mawa). These approaches have been institutionalized through the 2001 Forest Policy (MWLE 2001) and the 2003 National Forestry and Tree Planting Act (GoU, 2003) and are key to achieving the country's goal of increasing its forest cover from the current 9.5% to 24% by 2040 as stipulated in its conservation and development plans (MFPED, 2020).

Collaborative Forest Management aims to establish a mutually agreed and beneficial relationship between an eligible local community group and the governing authority of either a Central Forest Reserve (CFR) or a Local Forest Reserve (LFR) i.e., the "responsible body". CFM is grounded in shared roles and responsibilities, rights, returns (benefits) and relationships – the '4R' framework (Kazoora et al., 2020).

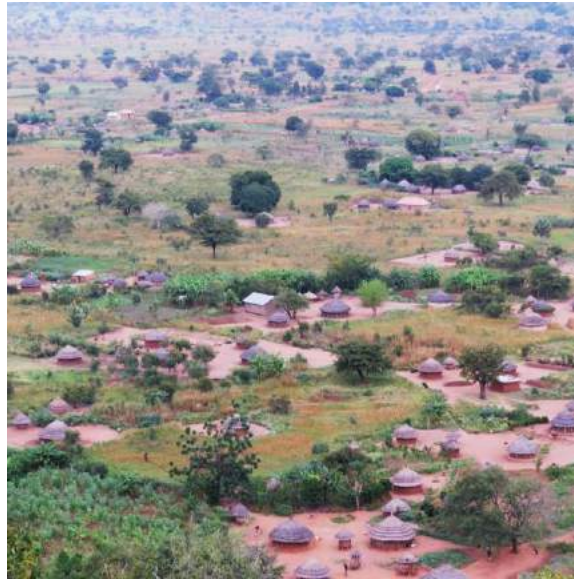


Figure 3. A typical village in Abim District

Collaborative Forest Management arrangement requires local community members to organize themselves to form and register a Community Based Organization (CBO) that then signs a CFM agreement with the state agency (District Forest Service or National Forestry Authority) to share roles, rights, responsibilities, and returns in a specified area of a state-owned forest.

For forest resources located in Wildlife Conservation Areas, local communities have been involved by signing Collaborative Resource Management Agreements (CRMA) with UWA in order to legally access subsistence resources from the protected areas and benefit from tourism revenue (Sandbrook, 2010).

The community benefits envisaged in the CFM agreements include devolved rights to exclude unauthorized users from accessing forest resources, extraction of agreed-upon forest resources from the forest by CFM members, tree planting on degraded parts of the forest reserve, involvement in alternative livelihood activities such as beekeeping and establishment of commercial tree nurseries. CFM has been implemented in over 27% of the government-owned forest reserves under the National Forestry Authority (Kazoora et al., 2020).

The process requires that the community members interested in the management of the forest as a community forest to form an identifiable management entity (such as a Community-Based Organization, Non-Governmental Organization, cooperative society, Communal Land Association (CLA), company, farmers' group or association, or traditional/cultural institution) and register a claim to the land and its resources to manage it as "common property".

Under UWA, Kidepo Valley National Park has four management zones, including one zone under a collaborative management agreement (Uganda Wildlife Authority 2012). The collaborative management zone has an integrated approach of park management which encompasses the protection, education, restoration, and community conservation approaches. In this zone, regulated harvesting of resources in a

sustainable manner by community residents is allowed in agreed resource-use areas through negotiated collaborative management agreements.

In the National Forest Authority (NFA), the number of Community Forest Management Areas (CFM) depends on the forest size and zones. NFA has several Central Forest Reserves (CFR) under CFM. Under CFM arrangement, NFA supports local communities by giving them land (part of the CFRs land) to plant trees. This area could otherwise be leased out for any other non-CFM tree planters, supporting the other groups for beekeeping. However, CFM is not up to standard yet, even though a few groups have signed agreements under the CFM. It is important to note that in areas where CFM has been used, it has been evaluated as successful.

However, in field discussions with NFA officials, both at the National level and in the Kidepo Valley landscape, they have mentioned challenges with the CFM arrangement. One issue is that NFA is constrained when it comes to implementing what is agreed upon. As one staff noted, “We are not doing well on CFM implementation as resources are scarce”. Another challenge mentioned was poor prioritization, where CFM is not taken as the priority “There are even years when CFMs are knocked out completely during budgeting”. However, some positive developments may improve the CFM programs. Recent support from USAID for CFMS may ease the technical and financial challenges in implementing CFM.

Unlike the CFM approaches in NFA and UWA, which is widespread throughout the country, the community forestry approach is still underdeveloped, and most of the groups have not been organized as CLAs. This process culminates in a formal declaration by the line minister. In the case of private land, the community forests have no management plans.

5.2.3. District Assemblies

As part of their mandate, the District Forest Services manages Local Forest Reserves in the Kidepo Valley landscape, each under a District Forest Officer in each respective district. However, LFRs are encroached and not forested. In some LFRs, there are institutional built-up areas for instance hospitals, police station, while in other LFRs land titles have been issued to individuals.

The initial steps to restore LFR will requires opening boundaries and support in forest restoration (with indigenous species) and protection. The challenge however is, for highly encroached areas, donors would not want to support such activities due to uncertainties and risks. Also on private land, the FSD supports and supervises tree planting projects belonging to faith organizations and communities.

The DFS has worked with the structures at the district level, under the natural resources department, which comprises the District Forest Officer (DFO), District Environmental Officer (DEO) and District Lands Officer (DLO). Although the three offices, (DFO, DLO and DEO) share the same department at the district level, they belong to different ministries. The line ministry for the DFO and DEO is the Ministry of Water and Environment, while the DLO belongs to the Ministry of Lands, Housing and Urban Development.

Also, the strategic options in the REDD+ strategy require an interdisciplinary approach, involving different institutions and line ministries as explained below.

5.2.4. Government Agencies Supporting REDD+

In Uganda, the Ministry of Water and Environment (MWE) is the lead institution for the over-all implementation and coordination of REDD+ activities. In the Uganda REDD+ strategy, the MWE functions through the Forestry Sector Support Department (FSSD), the National Forest Authority (NFA), the Directorate of Water Development (DWD) and the Directorate of Water Resources Management (DWRM). FSSD provides technical and coordination responsibility on behalf of the MWE.

The REDD+ strategy sets up eight (8) Strategic Options focusing on agriculture, forestry, energy, and technology. The interdisciplinary nature of the eight Strategic Options requires the MWE to collaborate with other agencies, including the Uganda Wildlife Authority (UWA), the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the Ministry of Energy and Mineral Development (MEMD) and Districts.

For the REDD+ Strategic Options related to agriculture and agroforestry, these are handled under MAAIF, with district and lower-level support from mainly NAADS and Ministry of Local Government- under the district production department and other relevant departments. For research, agricultural research organizations like NAFORRI, and other NARO institutes, and universities could support the activities with sector analyses. However, while the government institutions are well structured, they may have limited capacity, requiring to be backed up with partnerships with NGOs, private sector companies, district farmers associations, crop and livestock commodity cooperatives, faith-based organizations, local state and private tree nurseries and local agricultural industrial companies.

Where demonstration areas and extension activities are needed: private smallholder farms can offer demonstration sites e.g., on agroforestry and sustainable land management practices. The demonstration sites and extension services can be supported NAFORRI, DFS and NGOs.

For the REDD+ Strategic Options related to tree planting, structured institutions exist (mainly NFA, UWA and DFS), but these are not well equipped in terms of economic and human resources. The DFS and NFA foresters provide relevant services for the private plantation owners, while NAFORRI and academic foresters could be involved in research development. Ugandan Timbers Association (UTGA), agency in the private sector, and NGOs could provide farmers training in plantation forestry. The areas around the NFA and DFS and UWA protected areas would be the strategic choice of collaborative forest management (CFM) arrangements. In the Kidepo Valley landscape, there are already various NGOs and programs supporting CFM activities, which could serve demonstration sites to be scaled up. For example, one existing program is the B4R program which is implemented by the RTI –international, which supports NFA and UWA in FM arrangements in the area.

For the REDD+ Strategic Options related to Energy efficient stoves, this is handled under MEMD. Since MEMD does not have proper presence at district level and below, partnerships with NGOs and private business companies are encouraged, with support from MEMD and MOLG in each district.

For the Options related to Integrated wildfire management, NFA, DFS, UWA together with Ugandan police forces offer technical management of fires, both on protected and unprotected areas. Some private forest owners and forest farming associations may also have their own private fire management system. Another

potential service provider could be the Uganda fire brigade and various private companies which own forest plantations that have proper fire management plans.

For the Options on Livestock rearing in Cattle Corridor, MAAIF and its Directorate of Animal Resources (DAR) and the district local governments are responsible. Under MAAIF, the District Veterinary Services, NARO Zonal Offices and Private Livestock farmers association provide support at different levels. Another important institution is the National Genetic Breeding Centre -for livestock breeding and its various local partners.

Regarding fodder trees, seedlings, and grass seeds, NFA, DFS and the Uganda Seeds Ltd are in charge. Also, the private sector should be involved regarding the water dam excavation and restoration, the local Community Water Users Associations, and the District Water Departments. For cattle breeding activities, demonstrations of artificial insemination in the Cattle Corridor can be set up on farmers' lands.

5.2.5. National Forestry Authority (NFA)

In the NFA administrative system, the proposed Program Area in Kidepo Valley landscape is partly under Achwa range (Agoro-Agu sector) and Karamoja range (Moroto, Kotido, and Kaabong sectors). The Agoro-Agu sector in Achwa range is in Acholi subregion, while Moroto, Kotido, and Kaabong sectors are in Karamoja subregion.

NFA's main activities in both Achwa and Karamoja range include forest protection, restoration planting (also under CFM arrangement, and with support from B4R). Under CFM NFA also establishes community tree nurseries, to produce indigenous/native and fruit trees.

However, the forest protection is inadequate, and there are levels of encroachment in some reserves. NFA recognizes and plans restoration; both passive and active enrichment planting and in some reserves to open boundaries, but some of the activities have not yet taken off, due to financial resource constraints. Also, there are positive developments such as NFA receiving funding from USAID to open boundaries, around 6 reserves have been working on. In the case of highly degraded areas, NFA leases out land to private entities to plant trees.

5.2.6. Uganda Wildlife Authority (UWA)

In this Project Area, Kidepo Valley is one of the 10 national parks under UWA, in addition, to Karenga Community Wildlife Management Area. UWA' activities include Ecosystem Management, Wildlife Resource Protection, Promoting Protected Areas as Tourism Destinations, Community Conservation Activities, Problem Animal Management and offers Licensing for Wildlife Use.

Like other parts of Uganda, the landscape faces Community- wildlife conflicts. The most prevalent threat is crops damage. UWA is engaging communities in several ways, to reduce the human-wildlife conflict. Another management challenge is anthropogenically caused fires which commonly occur between January and March. Most fires are malicious, normally set by communities deliberately to create jobs for themselves (so they can be hired as firefighters). Other management challenges include poaching.

However, the general status country wide is that forests under UWA are generally more intact than other protected areas (e.g., those under NFA or DFS)



Jackson Hartebeest in Kidepo Valley National Park-Uganda

Section 6. Biodiversity



6. BIODIVERSITY

6.1. Biodiversity in Uganda

Uganda is famously known as the Pearl of Africa, is one of Africa's richest countries for biodiversity, ranking eighth of the 54 countries on the continent (Butler, 2016). The National Biodiversity Strategy and Action Plan II 2015-2025, sets Uganda's species of flora and fauna at over 18,783. The number of mammals stands at 380, birds – 1,016 (10% of the world's total), fish – over 600, amphibians – 98, reptiles – 150, butterflies – 1,242 and higher plants – 5,000. Although invertebrate fauna is less well-known, 1,300 species of butterflies and 260 dragonfly species have been recorded (Plumptre, Ayebare, Behangana et al., 2019).



Figure 4. Ugandan Kob (*Kobus kob thomasi*) in Kidepo Valley National Park

However, Uganda is expected to have lost about 50% of its biodiversity value between 1975 and 1995 due to high levels of hunting of large mammals and loss of forest, savannah, and wetland habitat to agriculture (Pomeroy, D., Tushabe, H., & Loh, J., 2017). While there has been some recovery in numbers of large mammals since 1996, because of populations rebuilding in the parks, much of the loss is continuing, due to habitat loss as the human population continues to expand. Some large mammals have been eradicated from the country including black rhinoceros (*Diceros bicornis*), white rhinoceros (*Ceratotherium simum*), oryx (*Oryx beisa*). Some other like Brigh's gazelle (*Nanger granti ssp. notata*) a subspecies of Grant's gazelle can still be found in Bokora Wildlife Reserve and has been seen in Kidepo Valley National Park coming from Kenya. Many other species have dropped to very low population levels, particularly African wild dog (*Lycaon pictus*) and cheetah (*Acinonyx jubatus*) which are estimated to number fewer than 25 individuals each. It is unknown what smaller, undescribed species may have been lost because of habitat conversion, but there are several known butterfly species described from the 1930s that have not been seen since that time (WCS, 2016).

The decline of biodiversity in Uganda is attributed to several factors such as habitat loss, agricultural encroachment and expansion, climate change effects, over-harvesting of resources, diseases, pollution, introduction of alien species, demographic factors, poverty, and national policies, among others. The rate of biodiversity loss in Uganda was calculated in 2004 to be around 10-11% per decade or 1% per annum (Pomeroy, D. and Tushabe, H, 2004).



Figure 5. African Jacana (*Actophilornis africanus*) in Kidepo Valley National Park

Therefore, Uganda designated 16% of its land as Protected Area (PA). The original goal was natural resources, habitat, and biodiversity conservation. However, recent protection efforts in Uganda identified natural resources and biodiversity conservation, as well as ecosystem services as key objectives of PA management (UNEP, 2014). At present, most of the Ugandan biodiversity are represented in its 722 pAs, covering 16% of the country's land area (IUCN, 2014). These pAs are being managed under five protection categories, namely, National Parks (NP), Wildlife Reserves (WLR), Central Forest Reserves (CFR), Local Forest Reserves (LFR), and Dual Joint Management (DJM) (MoWE, 2017).

In 1991 a comprehensive account of the biodiversity status of the natural forests in Uganda was carried out an inventory of twelve principal forest reserves and reported that there are 427 tree species, 329 forest bird species, twelve diurnal forest primate species and 71 species of forest butterflies and charaxes (Howard, 1991). The Albertine Rift and Karamoja region house most of the country's protected areas.

Karamoja is the only region in Uganda located in the Somali-Masai Regional Centre of Endemism (White, 1983). There are many species of plants that are restricted to the Karamoja region and occur nowhere else in Uganda. Many of these species seem to be at the limit of their distribution range from the Horn of Africa where the Somali-Masai Regional Center of Endemism is largely found. A total of 412 species of higher plants had been recorded (van Breugel et al., 2014).

6.2. Biodiversity of the Project Area

The Kidepo Landscape is less well known than the other landscapes in terms of its biodiversity. Kidepo is in the extreme north-eastern part of Uganda. Its north-western section is part of the international Uganda–Sudan boundary. The landscape is primarily made up of the Kidepo Valley National Park with adjacent Forest Reserves and Community Managed Areas. It also links to the Kidepo Game Reserve in Southern Sudan (WSC, n.d.). The Kidepo Valley National Park was proclaimed in 1962 and it covers 1442 km² and includes two valleys that make up the upper Kidepo and Narus Valley. Topographic and seasonal variations have created a variety of habitats from closed mountain forest to short-grass savannah. This wide variety of habitats supports a diverse range of wildlife species (Oliver, 1992).



Figure 6. Buffalos (*Syncerus caffer*) in Kidepo Valley National Park

The Kidepo Valley National Park holds a high diversity of mammals, 28 of the 86 species of mammals in the park were not found in any of Uganda’s other national parks. Some of these included the striped hyena, aardwolf, caracal, cheetah, greater and lesser kudu, klipspringer, dikdik, Bright’s gazelle, Chandler’s Mountain reedbuck, African Wild Dogs, Beisa oryx and the roan antelope (Ministry of Tourism, Wildlife and Antiquities (MTWA), 2012-2022). At present some of these species have become extinct due to serious pressures from outside the park. Many of the other large mammals found elsewhere in Uganda such as elephant, zebra, buffalo, waterbuck, Jackson’s hartebeest, lion, leopard, and both black backed and side-striped jackal, are found in the park (Olivier, R. C. D., 1992). The African elephant (*Loxodonta Africanaa*) has previously been classified as ‘Endangered’ and now ‘Vulnerable’ by the IUCN. Then the Nubian giraffe (*Giraffa camelopardalis*), one of the world’s most familiar animals and the tallest land mammal, is now threatened with extinction (IUCN, 2016).

Elephants are constantly generating forests by dispersing seeds and feeding from low-density trees in their habitats. Thus, elephants help the maintenance of the forest by feeding on low-density trees which provide a natural thinning of the forest. This action makes possible the rapid growth of other tree species

that will secure constant forest growth. However, Elephants have been hunted excessively in the past decades, and consequently, they are critically endangered. If elephants go extinct the forest will decrease their carbon production by 6 and 9 percent that in turn will increase global warming. Therefore, the conservation of elephants is crucial because they will help maintain the biodiversity of forests which in consequence will increase the retention of atmospheric carbon and this will all help with the climate change mitigation (Saint Louis University, 2023).

Kidepo Valley National Park possesses high conservation values and other park benefits such as unique fauna, unique crocodile species, multiple habitat types, support endemic plants and animal species, beautiful landscape, and water catchment area. Therefore, this area attracts tourism to the country. For instance, Kidepo is one the best places for birdwatching with 475 bird species. Common Ostriches can be found in Kidepo Valley National Park and in Bokora and Mateniko Wildlife Reserves inside the Project Area and Pian Upe Wildlife Reserve next to the Project Area. Hence to maintain the biodiversity of the area it is necessary management programs and priority actions, such as resource conservation, community conservation, park operations, ecological monitoring research and tourism revenue generation (Ministry of Tourism, Wildlife and Antiquities (MTWA), 2012-2022).



Figure 7. Red hartebeest (*Alcelaphus caama*) in Kidepo Valley National Park

An example of biodiversity loss is that cheetah is normally sited in the park during the dry season. Cheetah is nomadic and come in and out of the park, share territory with a park in South Sudan, as well as Pian Upe. During rainy season, cheetahs go to the Northern side of the park, where the grass is still short. They go out of Kidepo Valley National Park and return in the dry season when the grass is short. It is highly expected that Cheetahs will return to the park around December 2022 /March 2023, when the grass is dry. In the Kidepo valley landscape, a Cheetah was last sited March -April 2022 in [Narus](#) Valley, and in March 2022 in Kakine area. The last count of Cheetahs was in 2017 by a researcher who registered 14 Cheetahs in Nalusu valley, but the count was only conducted in one zone of the park and did not reach

the second zone. Cheetahs are listed as “Vulnerable” by the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species, but after a recent study revealed significant population declines, scientists are calling for cheetahs to be up listed to “Endangered.” In North Africa and Asia, they are considered “Critically Endangered” (Wildlifeday, 2022).



Terra Global Local Consultant in community meeting in Kaabong District

Section 7. Drivers and Agents of Deforestation



7. DRIVERS AND AGENTS OF DEFORESTATION

7.1. Drivers of Deforestation and Forest Degradation

At the country level, deforestation and forest degradation intensifies as one descends from protected areas to forests on private land (MWE, 2016). There are also differences within protected areas; the forests under UWA face less threat than CFRs under NFA. The worst scenarios are in LFRs under DFS – where most of the LFRs are heavily encroached and may not be easily traceable physically on the ground.

A literature review and discussions with different stakeholders show that in recent decades settlement (built-up areas) have expanded at the expense of forest land, leading to deforestation, while in some cases natural forests have been replaced with exotic species of eucalyptus, pine, teak, and others. In terms of degradation, extraction of wood for charcoal, firewood (for cooking and brick making), and poles for construction are the leading drivers of forest degradation. Other activities that degrade forests include bush burning, overgrazing, and stone quarrying. Bush burning is instigated by herders to feed livestock (burning for new grass shoots) and by poachers (catching edible wild rats). Once the grass is burnt and fresh grass comes up, the next activity is livestock free grazing, resulting in overgrazing, often with specific interests in the watering points. Overgrazing negatively impacts the forest, by destroying saplings, compacting the soil, and retarding the growth of trees (MWE 2022). Unlike other activities, stone quarrying is in specific sites, targeting Murram and granite/graphite stones. While stone quarrying may not directly impact deforestation, the activity impacts indirectly through the routes and roads created with increased access to forest products. Also, the scenery of the hills for attracting ecotourism reduces, while the risk of environmental hazards such as soil erosion, mudslides, landslides, and stone rolling increase. Table 9 provides a ranking of deforestation and forest degradation drivers identified in the Project Area during discussion among stakeholders from five districts: Kitgum, Agago, Karenga, Kaabong, and Abim. Overall, the table shows that charcoal production is the main threat to forest resources both on private land and in protected areas. However, there are some differences in the drivers of deforestation and forest degradation in protected areas and forests on private land. On private land, charcoal-making ranks as the highest threat to forests, while cop farming, and extraction of wood for poles and firewood take the second position. In CFRs, the main deforestation driver is forest conversion to crop farms, followed by charcoal production. LFRs are mainly encroached on for settlement/built-up areas (ranked as the main driver), and crop farming. Unlike other protected areas, there is a relatively lower deforestation and forest degradation threat in the National Park, except for bush burning. Bush burning occurs every year to promote grass regeneration which attracts wild animals and improve grazing lands. However, fires are not a major deforestation threat since trees are normally able to recover after burning.

In Table 9 there is a summary of the drivers ranking and sites where is happening and in Table 10 there is a summary of drivers and agents.

Table 9. Drivers of Deforestation and Degradation Kidepo Valley Landscape

OVERALL RANKING	DRIVER	UNDERLYING CAUSES	PRIVATE FOREST	PROTECTED AREAS				
				CWA	CFR	LFR	National Park	WR
1	Charcoal production	Lack of job opportunities Lack of funding Demand from large villages and cities Inadequate staffing of forest field officers Corrupt Forest officials	●	●	●	●		●
2	Smallholder agriculture expansion	Lack of or unavailable lands Unclear boundaries (for LFRs and CFR).	●	●	●	●		●
3	Fuelwood extraction	Domestic energy needs Lack of energy alternatives	●	●	●	●		
4	Construction poles harvesting	Private infrastructure & household houses	●	●	●	●		
5	Timber logging		●	●		●		
6	Forest conversion for settlements	Lack of or unavailable lands.	●	●				
7	Livestock free-grazing & fodder	Ethnic traditions Livestock fodder needs	●	●				
8	Wildfires			●			●	●
9	Forest conversion for woodlots	Domestic energy needs Lack of energy alternatives Unclear boundaries	●		●	●		

*CWA: Community Wildlife Area, CFR: Central Forest Reserve, LFR: Local Forest Reserve, WR: Wildlife Reserve.

Meetings with different stakeholders carried out by Terra Global help identifying nine distinct deforestation drivers, and five deforestation agents operating in the Project Area shown in Table 10.

Table 10. Summary of deforestation drivers and corresponding agents active in Kidepo Valley Landscape

DRIVER	PRIMARY AGENT			
	Farmers	Grazers	Charcoal traders	Hunters/Poachers
Charcoal production			●	
Smallholder agriculture expansion	●			
Fuelwood extraction	●			
Construction poles harvesting	●			
Timber logging	●	●	●	
Forest conversion for settlements	●	●		●
Livestock free-grazing & fodder		●		
Wildfires		●		●
Forest conversion for woodlots	●		●	

7.1.1. Description of Deforestation Drivers

7.1.2. Charcoal Production

Charcoal production is a recent activity in the area (started around 10 years ago), but has become the main driver of forest degradation, and eventually deforestation (the conversion of degraded woodland for agriculture). The main charcoal dealers are from neighboring districts and Kampala-based traders. They use local community members to access the charcoal in two ways: First, through land transactions, there are cases where foreigners purchase or hire land with the intention of cutting all the trees on it for charcoal. Second, using local community members as labor- is another approach used by charcoal traders. The charcoal traders pay for several charcoal sacks and ask the local people to get them by whatever

means. For instance, in Karenga District, charcoal makers come from as far as Moroto, and do extraction in the areas. Some charcoal makers are communities staying in the wildlife corridors who do charcoal making as a livelihood alternative. According to the District Forest Officers, no charcoal dealers or charcoal makers have registered with the district local government authorities. The charcoal makers and dealers mostly move at night, with no movement permits, and are very hard to monitor. Charcoal makers in Uganda are largely nomadic and move from one place to another.

Although most districts (e.g., in Abim, Kitgum and Kaabong) have ordinances and bylaws banning charcoal trade, these are mostly not enforced, due to limited logistics capacity.



Figure 8. Charcoal is sold along roadsides and is used for domestic cooking in urban areas.

A large part of the Karamoja sub-region is semi-arid, with limited rain for agriculture. Crop farming is limited to the rainy season and communities have limited survival alternatives during prolonged dry spells. For instance, recently Kabong District and other parts of the Karamoja sub-region the rains have not been sufficient and regular effects hamper the agricultural production. This forces the communities to rely heavily on forest extraction, especially charcoal production for sale.

7.1.3. Smallholder Agriculture Expansion

Smallholder farming is a driver of deforestation in the Project Area although discussions with district forest officials revealed that the initial incentive to clear land is primarily motivated by charcoal production, rather than crop farming. An example is in Abim where charcoal dealers from outside the district come disguised as land buyers or tenants and are sold land cheaply at UGX 600,000 /acre (although the actual buying price is 1,500,000 for local buyers). They use the trees on the land for charcoal production and once the land is severely degraded, farming takes over automatically. Another way is to rent land – at 100, 000/acre per year and later use the trees on the land for charcoal production.

In CFRs and LFRs, smallholder farming is also a driver of deforestation and forest degradation. The worst scenarios are in LFRs where both the government and local community members have constructed structures in LFRs; even the central government have built institutions such as schools, health centers, sub-county headquarters, military barracks, prisons, and others inside protected areas.

Another threatened category is the Community Wildlife Areas, due to the overlapping mandates and ownership (e.g., UWA, District Forest offices, communities). Due to uncoordinated institutional arrangements in CWAs, encroachment easily occurs when the land is viewed as redundant. An example is Karenga Wildlife Area where the UWA, currently hosts Uganda prison premises. Lower local governments (e.g., sub-county level) have also divided plots in LFRs for sale to individuals. Some local community members have gone ahead to process titles for these inholdings within the reserves.

The boundary infrastructures for both the CFRs and LFRs were destroyed and are now invisible in some sections. This is worse with Local Forest Reserves (LFRs), where there are unclear physical locations of some reserves. For instance, most CFRs were gazetted between 1942-1945 and the boundaries have not been identified for a long time and are unclear.



Figure 9. Agricultural lands approaching forest areas in Kaabong District

7.1.4. Fuelwood Extraction

Firewood is extracted both for sale, home use (for cooking and lighting), and brick making. Brick making occurs mainly during the dry spells from November to March. As the population increases and the housing demand does as well, it also increased demand for firewood for heating brick kilns. The National Charcoal Survey for Uganda 2015 (s) shows households that use firewood for cooking use on average 8.9Kg of firewood per day (Godfrey *et al.*, 2010).



Figure 10. In rural areas, women are responsible for collecting fuelwood.

7.1.5. Construction Poles

Construction poles are extracted both for fencing and for sale. Tree cutting for home fencing is mainly in the districts inhabited by the Karamojong. Culturally the Karamojong harvests a lot of wood to fence homesteads (manyattas). Following cultural tradition, each married woman must have a fence around her hut, in addition, to the overall fence for the homestead or family compound. This cultural practice requires a lot of wood for constricting these fences.

However, while the kind of fencing was mainly observed in the Kaabong district, are differences in the landscape of how these fences are built. Some districts (e.g., in Karenga) actively discouraged this and people may change this practice to some extent.



Figure 11. Wood and poles used for domestic construction.

7.1.6. Timber Logging for Local Use

Discussions with stakeholders concluded that logging mainly occurs in CFRs, in the form of illegal harvesting of timber trees for local commercial purposes (to be sold at local markets). The main actors are timber dealers, timber traders, carpenters, and neighboring farming communities. The timber trees targeted include Mahogany and *Azelia Africana*, *Khaya spp.*, *Albizia coriaria*, *Vitellaria paradoxa*, *Poliostigma thorningii*, *Ficus sycomorus*, *Vitellaria paradoxa*, *Tamarindus indica* and sandalwood. In places where illegal pit sawing can be found, the harvest is highly unsustainable, and there is no Exploratory Inventory (EI) and Integrated Stock Survey and Management Inventory (ISSMI) carried out for CFRs (MWE, 2018).



Figure 12. Timber wood extraction for domestic construction.

7.1.7. Forest Conversion for Settlements

Regarding the built-up areas in LFRs, discussions with the DFS officials show that the main encroachers are government institutions and local community members, that come from a political higher angle. Most infrastructures have been constructed by powerful individuals from districts and those with political connections.

For forests on private land, the complexity of land tenure in the Karamoja and Acholi sub-regions affects the resources used and risks the forests falling under the *tragedy of commons*. In both Karamoja and Acholi subregions, the tenure system is purely customary, which includes both private and communal areas. Traditionally, decisions on land require a consensus of clan members, and this is often hard to agree on land management decisions. The protection of forests on private land requires the private forest landowners to be organized to protect the forests, but there has been little effort in registering the communal forests. A related dimension is that the motivation of private landowners to conserve the forests is poor due to the long-term nature of the forestry enterprises.



Figure 13. A main town and market in Abim District expanding to close to forest reserves.

7.1.8. Livestock Free-Grazing and Fodder

For livestock free-grazing, herders have specific interests in the watering points and pasture for animals which are mainly found in the woodlands (MWE, 2018). Discussions with stakeholders concluded that the main actors are local farming communities, homesteads, kraal owners and cattle traders. Grazing is also from neighboring countries e.g., from the Turkana who enter the country and make temporary shelters. Cattle grazing destroys saplings, compacts the soil, and retard the growth of trees (MWE, 2022). Grazers also set up wildfires to have fresh grass growth for their animals and illegally harvest bamboo poles for domestic use.

7.1.9. Anthropogenically Caused Wildfires

Discussions with stakeholders and review of official documents found that wildfires are mainly started by grazers (burning for new shoots), poachers who also burn areas to attract game to new shoots that regenerate after a burn (to catch edible rats and antelope), farmers, and chiefs (Rwot). In addition, bush burning is also done partly due to security issues; to open areas that may be concealing illicit acts or behavior.

The problem is that any growing vegetation is destroyed apart from fire-resistant species e.g., *Acacia* spp. Bushfires destroy small trees and saplings, cause degradation and in some cases leaving soil bare and prone to erosion. The bushfires are normally set towards the end of the rainy season to allow grass for animals to grow before the dry season sets in (MWE, 2022).



Figure 14. Wildfire practice in Karenga Wildlife Area

7.1.10. Forest Conversion for Woodlots

The main species found to replace woodlands are eucalyptus, pines, and teak by local landowners. This is mainly done by local communities, due to a lack of awareness for preserving the indigenous vegetation. Discussions with local communities reveal that setting up woodlots is viewed as prestigious, and some landowners simply love to have artificial forests. And while it is critical to promote sustainable fuel wood production, this needs to take place on existing non-forest areas and not convert existing forests.



Figure 15. Woodlot of teak.



Community Meeting in Abim District-Uganda

Section 8. Project Objectives



8. PROJECT OBJECTIVES

8.1. Problem Analysis

Deforestation and forest degradation are major problems identified in the proposed Project Area which are impacting the forest ecosystem, biodiversity, and community well-being.

8.1.1. Deforestation.

Some of the underlying causes for deforestation are the following:

- Communities in the Project Area depend mainly on agriculture (maize, sorghum, plantain) and livestock as a source of food and income. Due to the use of unsustainable and inefficient practices such as monocultures, no fertility inputs being applied to the soil, misuse of agrochemicals, farmers have depleted the soil fertility and productivity levels are low. Then farmers tend to expand to find new areas in search of better soil and growing conditions, extending to forest areas, where they clear up the land to plant. Another underlying cause for the expansion is the lack of knowledge from farmers of climate sensitive agricultural systems and techniques.
- The Uganda Bureau of Statistics reported in December 2019 that 94 percent of the national households use either firewood or charcoal for cooking. Thus, forests in the country are facing severe pressure, also exacerbated by demands from Kenya. Charcoal production also provides income and livelihoods for most households in the Project Area being one of the main income alternatives; and while the production and sale of charcoal has been prohibited in some districts, demand for charcoal remains high.
- There is an inadequate staffing of forest field officers, the size of forest reserves doesn't match the magnitude of the task of patrolling big areas and there is a great demand for wood products.

8.1.2. Forest Degradation.

Persistent reduction of the canopy cover of forest areas due to human activity such as timber removal, fuelwood extraction, wildfires, and livestock free grazing & fodder is a cause of degradation in the Project Area. Agents are mainly local communities, landowners, herders, charcoal traders, and poachers.

The main strategies to influence the identified groups are:

- Landowners, clan leaders and elders can be influenced through improvement of their income and good relationships-built through engagement activities.
- Communities to be involved in benefit sharing plans and in conservation efforts for them to understand the value of forests.
- NFA, UWA and District Forest Officers can be influenced through forest management interventions and capacity building.

8.2. Objectives

The National's REDD+ Strategy objective is *"A socially and environmentally viable national strategy for reducing emissions from deforestation and forest degradation, enhancing the role of conservation of biodiversity, promoting sustainable management of forests and enhancing carbon stocks"*.

B4R's mission is to “*create landscapes where wildlife populations, natural habitats, and empowered communities, are resilient and prosperous*”. B4R approach for Kidepo Valley Landscape is through governance, effective management, and business model (benefit sharing and conservation enterprises). B4R activity ends in 2025 and for the long-term strategy, the program aims to find a long-term, performance-based funding of nature-based solutions.

The main objective of the project is then **to promote sustainable natural resource management for reducing deforestation and forest degradation supported by an effective business model that enhances governance of the Kidepo Valley Landscape**. Activities promoted by the project include many practices which go beyond the sole objective of conservation.

8.3. Theory Of Change

With participation of RTI staff and having finished all stakeholder's engagement activities, a workshop was done to build the theory of change based on the main findings. This project theory of change is based on three conditions:

- i. If communities and government organizations have improved their capacity to reduce deforestation by building capacity to establish long-term management plans and monitor improved systems to reduce forest violations and ensure sustainable land-use planning and implementation.
- ii. If communities adopt sustainable use of forest products
- iii. If communities have improved capacity to be engaged in profitable and sustainable livelihoods to ensure resilience

Then forest areas would become resilient, enhancing ecosystem services for biodiversity and community well-being. The main strategy for the project is to promote an effective business model that enhances governance of the landscape.

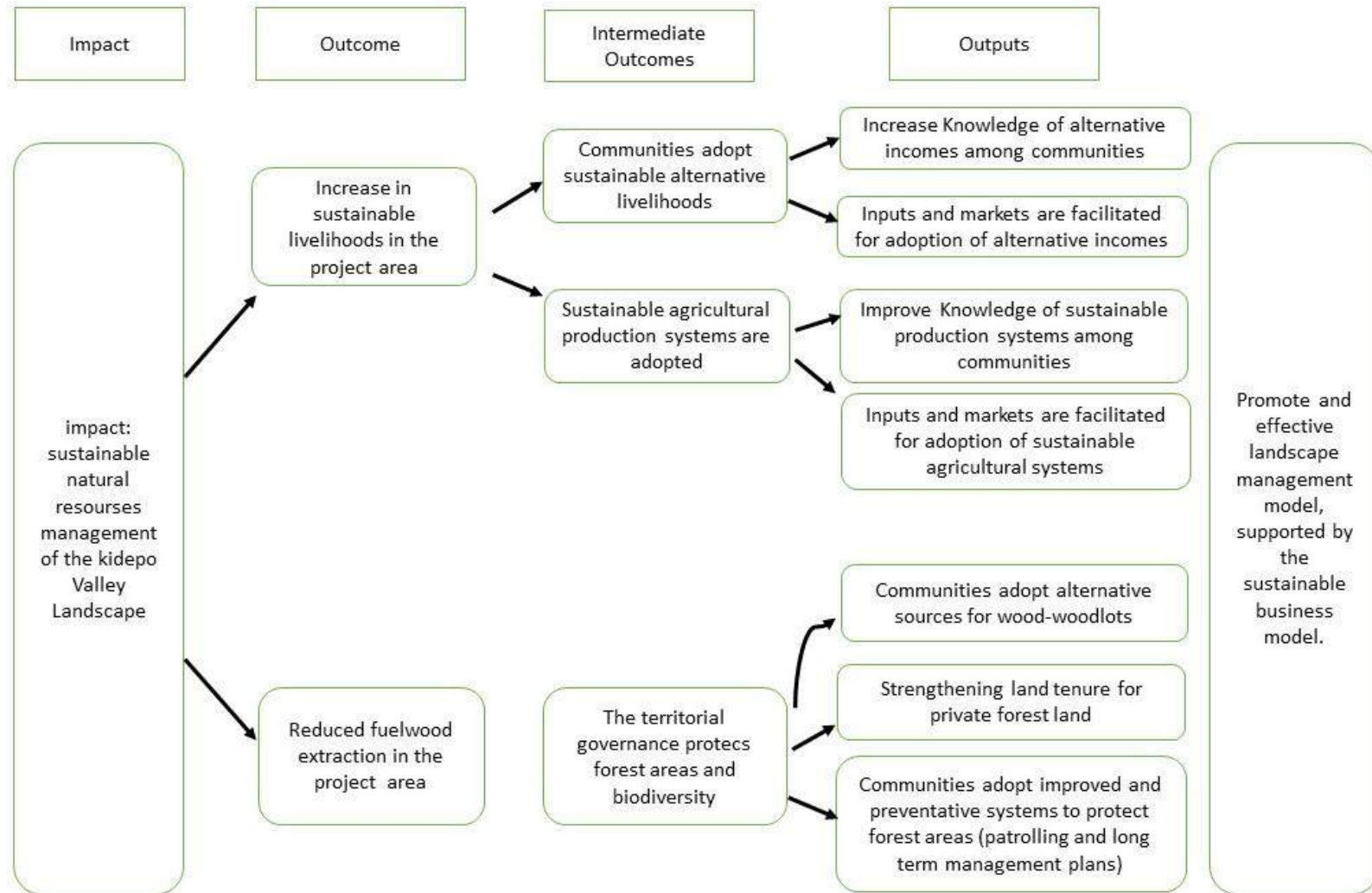
Community participation and engagement in the project is ensured as the proposed activities, outputs and outcomes align with the communities' goals. This was confirmed through proper consultation and open discussion with leaders and community members.

Some of the assumptions made are the following:

- Government promotes conservation policies for protected areas.
- Institutional coordination between partners is effective.
- Communities and landowners within the Project Area engage in project activities and their commitment to the conservation actions.

The proposed outcomes and outputs for the project are described in Figure 16 which lays out the chain of results that need to happen for change to occur.

Figure 16. Theory of Change for the Project Area



8.4. Proposed Project Activities to Achieve the Proposed Outcomes

The Kidepo Valley Landscape project is targeting 160,471 hectares of forest located both inside and outside of protected areas in Uganda under the management of NFA, UWA and communities and over rural 117,131 households according to the National Population and Housing Census 2014 living within 2.5 million hectares defined as Project Area.

This landscape, now islands of standing forest in a heavily degraded landscape matrix, are rapidly being degraded by communities and charcoal traders. To reduce deforestation and forest degradation, the project proponents, working in partnership with NFA and UWA, will be implementing activities designed to improve the capacity of Institutions working in the landscape and communities to manage and protect natural resources, and to reduce the communities' needs for natural resources, through building alternative livelihoods.

Specifically, the project proponents will support activities in the Project Activity Instance Area that will reduce pressure on both private forest and protected areas. The following list of activities was proposed to reduce deforestation by various stakeholders who were engaged during field work.

- Support Patrolling and Long-Term Management in Protected Areas
- Forest protection through patrolling, social fencing, and maintenance of forest boundaries in Private Land.
- Creation of alternative sources of fuelwood through agroforestry and farm woodlot management
- Sustainable intensification of agriculture on existing agricultural land (e.g., sunflower)
- Development of local enterprises based on sustainably harvested NTFPs such as honey and livestock.
- Strong capacity and functional local Forest Department with regular patrolling and long-term management plans, and
- Strengthening land-tenure and Protected Area governance.

Each of these Project Activities is designed to target one or more of the identified deforestation and degradation drivers (Table 11).

Table 11. Project and leakage prevention activities and the targeted deforestation drivers in Kidepo Valley Landscape

DRIVER/ACTIVITIES	1. Support Patrolling and Long-Term Management in Protected Areas;	2. Forest protection through patrolling, social fencing, and maintenance of forest boundaries in Private Land.	3. Creation of alternative sources of fuelwood through agroforestry and farm woodlots management;	4. Sustainable intensification of agriculture on existing agricultural land (e.g., sunflower);	5. Development of local enterprises based on sustainably harvested NTFPs	6. Strengthening land-tenure and Protected Area governance.
Charcoal production	●	●	●	●	●	●
Smallholder agriculture expansion	●	●		●		●
Fuelwood extraction	●	●	●			●
Construction poles harvesting	●	●				●
Timber logging	●	●			●	●
Forest conversion for settlements	●	●		●	●	●
Livestock free-grazing & fodder					●	
Wildfires	●	●				
Forest conversion for woodlots	●	●	●			

8.4.1. Support Patrolling and Long-Term Management in Protected Areas

Forest patrol facilitates law enforcement and involves handling impounded produce, forest fire management, monitoring encroachment and boundary patrols. While forest fires are seasonal and mostly critical in a dry season, other patrol activities are continuous though out the year, there are guidelines for

fire patrols. In protected areas, e.g., in NFA patrolmen are contracted periodically (usually selected from local community) to prevent and control illegal activities in and around the reserves. Ideally, the number of people patrolling should depend on the size of the forest, although discussions with NFA field staff indicated that, the number of people patrolling is not adequate in most CFRs, and illegal activities go on unabated. One way to solve this shortage is through collaborative partnerships such as in CFMs, where NFA benefits from local community patrolling.

This activity improves the capacity of NFA, UWA, District Forest Offices, in terms of increased man-power, and communities' participation in patrolling of protected areas' boundaries. The communities get training, awareness building, employment as contracts, signage (for boundaries), for instance in boundaries clearing, surveys, and on-going monitoring provided under the REDD+ process. These activities are critical to ensuring the communities are aware of Protected Area boundaries and that they are integral parts of the on-going enforcement in these areas. The activities involve a significant level of community engagement to build capacity through training, technology and more people supporting the NFA, UWA and District Forest Offices.

Currently, most protected forests in the Project Area have forest management plans (FMP) but these have mostly expired and are under renewal and not yet operational. For the CFRs the management plans are mostly at sector level, and this lumps together many CFRs under a sector, although care is taken to attend to some individual CFR aspects within a single FMP. Developing the Forest Management Plan is a participatory process involving a wide range of stakeholders and long consultation processes. This makes the exercise quite tedious and expensive. The FMP is a long-term plan (lasting about 10 years) and requires that long term inclusiveness, with Inputs from various stakeholders. For instance, consultations are required at sub-county, district, and national levels and with forest adjacent communities. While the lead ministry that approves the FMP is the ministry of water and environment, the process requires that key partners' approvals, e.g., United Nations Development Program (UNDP), National Environment Management Authority (NEMA), Non-Governmental Organizations (NGOs), Community Based Organizations (CBOs) and other institutions. The process also requires high level data, analysis and reporting, and advanced skills which call for capacity building, logistics (e.g., in terms of transport and other facilitation of field staff).

Encroachment in CFR's and LFR's has been enhanced because forest managers do not know the exact boundaries of forest reserves, they manage. Demarcating and maintenance of protected area's boundaries will reduce encroachment from agriculture and settlement and will facilitate the evictions process of encroachers. This will also help clarifying the boundaries of community forests on private land.

Boundary demarcation will encompass several related sub-activities including the following: redefining the boundary where they are unclear, stakeholder awareness meetings from the district, sub-county, and down to the village level, reconnaissance surveys for in-field boundary identification, a grievance and redress procedure in case of complaints from neighboring landowners, and labor for cutting boundary lines (rural labor opportunities). In addition, tree planting may be required to create live boundary markers.

8.4.2. Forest Protection Through Patrolling, Social Fencing, and Maintenance of Forest Boundaries in Community Land.

Protection of community forest requires: 1) Community-based agreements: Rural communities can establish agreements among themselves to protect private forest areas. These agreements could include rules on land use, resource extraction, and hunting, among others. By agreeing on a set of rules and enforcing them collectively, community members can ensure that private forest areas are protected. 2) Legal frameworks: Communities can also work with local authorities to create zoning regulations that protect private forests from development which would need its own structure (e.g. CFM, KKAKKA CWA). 3) Awareness campaigns: Rural communities can participate in awareness campaigns to educate people about the importance of protecting private forests. These campaigns could include community events and workshops. By raising awareness about the benefits of preserving forests, and carbon revenue, communities can build support for protection efforts. 4) Monitoring and enforcement: Rural communities can establish monitoring systems to track illegal activities in private forest areas. This could involve setting up patrols to detect unauthorized logging or hunting. 5) Economic incentives: Rural communities would receive incentives from carbon finance. Overall, protecting private forest areas requires a combination of legal, social, and economic measures. Rural communities can play a critical role in enforcing protection efforts, by working together to create and enforce rules, raise awareness, and provide incentives for private landowners.

The district forest officers asked for support to motivate private forest landowners to conserve forests. The nature of the motivation proposed is in terms of non-monetary incentives and alternative income-generating activities. However, the preliminary step to protecting forests on private land is resource assessment to know their extent, followed by forest resource mapping. Once the mapping is done, forests can be registered, and landowners issue certificates of ownership to strengthen their tenure security. Landowners can be engaged in protecting their own forest, with the right of exclusion of external users.

8.4.3. Alternative sources of fuelwood through farm woodlots management

Unsustainable charcoal production and over-extraction of fuelwood are related to the lack of energy alternatives. Providing smallholder farmers with high-quality, low-cost tree seedlings to grow trees to produce charcoal will relieve some of the pressure on standing forests. Through a partnership between CFM Groups, Community Wildlife Scouts, and social enterprises like Kijani Forestry the project would support the planting of a diversity of tree species for both timber and charcoal; through a “Nursery Hub” model, where Kijani Forestry set many rural nurseries to grow seedlings and provide training to groups of farmers looking to partner with them.

Through the short-rotation coppice system, fuelwood harvested from trees can be regenerated and become long-term income and a fuel source perpetually replacing fuel need from old growth forest.

8.4.4. Sustainable agriculture on existing agricultural land (sunflower production)

Agriculture is being practiced in the Project Area due to land insecurity and a growing population. To meet the demand for food production, farmers need to increase their productivity, and some of the proposed activities are: 1) use of drought-tolerant and quick-maturing crop varieties (seeds or plants), 2) soil conservation practices, 3) crop diversification (e.g. chia, legumes), 4) effective use of fertilizers, 5) integrated pest management. Plus, there is a need to build capacity of the agricultural extension staff on agricultural practices, water management systems, and soil conservation practices.

Besides the increasing agricultural production, there is a need for farmers to access better prices for their products. Thus, the project can support farmers to join/establish cooperatives or associations to allow them to negotiate better prices through collective bargaining and offering bigger volumes.

8.4.5. Development of local enterprises based on sustainably harvested NTFPs and livestock

Since 2020, B4R through its Strategic Investment Fund (SIF) has provided funds for private sector and community-based enterprises to achieve biodiversity conservation and livelihood objectives in Kidepo Valley. One of the key enterprises is the Golden Bees enterprise, an innovative social enterprise that provides a full-scale range of beekeeping products and services and nowadays is targeting 500 individuals in Kidepo Valley in the apiary supply chain. Additionally, shea nut, gum arabica, and balanit (desert date) value chains should be explored as well for NTFPs.

The project is looking to continue providing materials and tools for beehive-production and buy final products such as honey and beeswax. This will provide an alternative source of income for farmers and create improved skills and knowledge to develop alternative incomes.

Development of local enterprises can be implemented through some organizations already engaged in related livelihood activities, with a potential partnership including ACTED and VSF (Veterinaires sans Frontieres). ACTED has been working in Karamoja since 2007 with a focus on agro-pastoral communities in arid and semi-arid locations. Some of the ACTED's programs in Nakapiripirit District- Karamoja support communities in developing water-harvesting earthworks, improving grazing practices, and developing year-round vegetable gardens. Similarly, VSF focuses on small-scale farming and livestock keeping, and pastoralism in Karamoja. Some of their support included providing high-quality livestock, building better livestock shelters, and supporting sustainable water supply projects.

The above livelihood activities proposed in this project are in line with major enterprises being promoted in the area. Discussions with various stakeholders show that current interventions promoted are mainly about drought effect: These include the construction of Valley dams and valley tanks, Animal feed, Drought-tolerant crop varieties and pest/disease-tolerant varieties, Micro irrigation, Kitchen gardening, improved breeds for high-yielding crop varieties. Hence, the carbon project may attract other good carbon-friendly agricultural investors, including those already operating in the project area, both government and NGOs, national and international organizations, e.g. DADO (Dynamic Agro pastoral Development Organization), CARITAS (a church-based agency), AFI (Andre Foods International), FAO, World Food Program, Sasakawa Africa and many others.

8.4.6. Support for Land Tenure Registration

While the CFRs and LFRs are legally protected, the supervision of activities on privately owned forests and communally owned forests is difficult since most of them are not legally declared. The district forest officials proposed that, helping the private forest owners get certificates of land ownership will help the local government to supervise the forests and control the current threats of agricultural conversion and unsustainable charcoal production on communal land. Thus, the project will support these registration activities.

Private forest registration in Uganda proceeds in eight (8) steps, each requiring different actors (Forestry Sector Support Department (MWE), Uganda 2015): (1) initiating the private forest management process (2) Policy and legal requirement awareness, (3) Situational analysis, (4) Institution formation/formalization (5) Demarcation of the Private Forest boundary (6) Development of a Management Plan for a Private Forest (7) Registration of Private Forest and (8) implementation of Private Forest Management Plan. Stages 1 and 2, require consultations and holding meetings with relevant authorities including LC1-III, forest adjacent communities, Area Land Committee, the District Forest officer, District Land Board, and the District Council. Step vii involves Applying for the registration of a Private Forest through the DFO to the land board, verifying the availability of land for establishment/under forest for registration with the land committee and district and board, seeking approval of the application from the District land Board and then by resolution of the District Council, finally Secure tenure and access right from Ministry of Water and Environment through the issuance of a forest registration certificate (Ministry of Water and Environment, 2015).



Kijani Forestry Staff in Agago District- Uganda

Section 9. Options for Market Standards



9. OPTIONS FOR MARKET STANDARDS

9.1. Relevant Market Standards Overview

Given the expected upcoming changes to the Verra standards and methodologies for avoided unplanned deforestation and degradation projects, as well as the desire to link this Project Area into the National REDD+ Strategy, the use of standards has considered the pathway under a Jurisdictional Program. Thus, there is a limited number of recognized standards that may be applied. Also, with the goal to finance this Program through private sector climate finance, only standards recognized by investors/buyers can be considered. And while there are three publicly available standards that provide rules, methods, and requirements for REDD+ accounting, none have enough Jurisdictional Programs validated and verified to determine which is preferred by the market. There are other factors, beyond the market’s acceptance and the quality of the VERRs being produced under a standard that should be considered including:

- Uganda seeks the initiation of the required Jurisdictional REDD+ Programs with strong engagement of local government, private sector and indigenous peoples and local communities and through consolidation of actors in the landscapes around the identified REDD+ Strategic Options.
- How to leverage the existing USAID program managed by RTI to blend sources and scale up to mobilize the use of climate finance.
- The methods used to select a GHG market standard for Forest Reference Emissions Level (FREL) and Measurement, Reporting, and Verification (MRV) also considered how to:
 - leverage and align (as possible) with Uganda’s technical approach to UNFCCC FREL.
 - support the measurement and crediting for implementation areas supported by RTI as well as other areas in the Jurisdiction that could be funded by investors/buyers separately.
 - support models where GHG results and even benefits allocation could be measured in a spatially explicit manner (for those components of the Benefits Allocation Plan that are defined as such)
 - Applicable for application in Uganda.

The complete list of standards that include jurisdictional accounting that could be considered for the Program are included in Table 12.

Table 12. AFOLU Standards that include Jurisdictional Accounting

Standard	Meets Requirements
Architecture for REDD+ Transactions (Trees Standard)	Jurisdictional without prescribed nesting, but with potential to apply nesting. This standard requires a minimum of 2.5 million hectares of forest and subnational is only until 2030.
Verified Carbon Standard – AFOLU	Applies project level accounting for all AFOLU typologies, which can link to the JNR. This is currently undergoing a major revision that will impact the ability to apply it to projects, but this will not impact this Program.

Standard	Meets Requirements
Jurisdictional and Nested REDD+ (Verra)	Allows for Nesting of a AFOLU Grouped Project to use the Jurisdictional REDD+ Program and can register a JNR baseline under the JNR Rules and Requirements.
REDD.plus	This standard is not considered creditable by most market participants. It states that the standards used to create an RRU are those created under UNFCCC processes, approved by COP decisions, and enshrined in the Paris Agreement. And they apply independent verification to two individuals from the UNFCCC Roster of Experts – one from a developing country and one from a developed country. There is no publicly available set of standards or references specific UNFFCC requirements.
Revised Methodological Framework of the Carbon Fund (Forest Carbon Partnership Facility (FCPF), 2020)	While this standard supports jurisdictional programs and can apply strata specific methods to properly quantify and measure VERRs it cannot be applied independently.

Based on the reasons presented in Table 12 the options were narrowed to 1) Verra JNR (FREL baseline w/AFOLU or program) (Verra, 2021a), (Verra, 2021b), (Verra, 2021c) or 2) VCS AFOLU – nesting in JNR (Verra, 2022d). TREES was not considered because the Jurisdictional nor Project Area met the 2.5-million-hectare requirement.

9.1.1. VERRA (VCS and CCB)

Verra has a long track record, since 2007, in providing GHG quantification standards for AFOLU (including REDD+ projects and Programs) and is a market leader in developing jurisdictional and nested REDD+ standards. Verra has a standard that could support the generation of high-quality multiple benefit verified emissions reductions and removals for the Program. They can be applied in multiple ways to support the Jurisdictional Program. The VCS Standard supports project level accounting for AFOLU projects that include carbon typology that covers the different activity types that could produce emission reduction and removals under the Program. This is Avoided Unplanned Deforestation and Degradation (REDD-AUDD) Section 8.2.178.2.1.

And after years of running AFOLU project standards, Verra released its first Jurisdictional and Nested REDD+ (JNR) framework in October 2012. The JNR Rules and Requirements are currently on version 4 which was released on 15 April 2021. Currently there is only has one JNR baseline under validation titled the Korea-Myanmar Joint - Bago Region REDD+ Program.⁵

Verra has recently released for public comment a major change to their project based AFOLU methodologies for Avoided Unplanned Deforestation and Degradation. These are designed to directly align project baselines with jurisdictional FRELs. And while this approach has a goal of ensuring more consistently constructed baselines applied to projects is has created major uncertainty in the market. In addition, Verra is also seeking to provide its own generated baseline for projects to apply in cases where there is no Verra registered JNR baseline.

9.1.2. Verra JNR Rules and Requirements

Verra’s Jurisdictional and Nested REDD+ Rules and Requirements are designed to support the ability to nest both subnational programs within national programs, and to nest projects within subnational or national programs. “Nesting” refers to a set of provisions aimed at ensuring project-level accounting is aligned with jurisdictional (e.g., subnational) strategies and methods. It includes criteria and requirements to ensure the alignment of baselines, monitored data, emission reductions and/or removals estimates and carbon accounting across levels, i.e., projects, subnational programs, and national programs.

The JNR Rules and Requirements establish three ways to nest smaller areas (projects) into national or subnational programs. The JNR Rules and Requirements allow for proponents to validate a FREL only or to register a program which includes the monitoring of results and issuance of credits. There are three program scenarios to select from that primary defined the way that measuring, and issuance of credits will work. The JNR Rules and Requirements contain detailed graphics, and each scenario has its own set of Rules. Table 13 provides a summary of how these could apply to Kidepo Valley Landscape assuming that Uganda would not be adopting JNR at a national level any time soon.

Table 13. Summary of JNR Options for Kidepo Valley Landscape (assuming no national Verra JNR Program)

Verra JNR Option	Description
Jurisdictional FREL only	If a JNR FREL (not the full JNR Program) validated, it could be used under program standards for avoided unplanned deforestation and degradation areas for any nested projects in the JNR Area. FREs must be allocated use the <i>JNR Risk Mapping Tool</i> or another method if proven to be more accurate.
Scenario 1 – Jurisdictional FREL with monitoring and crediting of VERRs to PIAs nested	Uses allocated FREL for the baseline and results are monitored for the PIAs and issuance is made directly to PIAs.
Scenario 2 - Jurisdictional FREL with monitoring and crediting of VERRs to PIAs nested and to jurisdictional area at large	Same as Scenario 1, but results are monitored is done for the whole jurisdiction and issuance is made to PIAs inside the jurisdiction and outside to the JNR area in total.
Scenario 3 - Jurisdictional program crediting only	Not considered as crediting is only to the jurisdiction and it would not allow for results within Project Area to be issued directly and separately results in the separated directly form the Jurisdictional Area.

The typology for GHG crediting in the Kidepo Valley includes reducing unplanned deforestation and degradation. Under both Scenario 1 and 2, the FREL/baseline for priority areas subject to unplanned deforestation and degradation would be established per JNR FREL rules and then be monitored under the VCS AFOLU rules. Verra JNR has the following key elements to consider.

9.1.3. VCS AFOLU Project Standards (for nesting)

The following section provides information on how VCS project standards and methodology would apply to the carbon typology in the Kidepo Valley Landscape area.

9.1.4. Typology under AFOLU VCS

Reduced Emissions from Deforestation and Degradation (REDD+)

Forest areas within the Kidepo Valley Landscape can qualify for REDD+ under the AFOLU of the Verified Carbon Standard (VCS). These areas must meet the definition of forest and be susceptible to deforestation. This Program can be initially registering, monitoring, and issuing in accordance with the VCS AFOLU standards using a Jurisdictional Baseline (Option 1) which can be the same as the baseline developed for the AFOLU grouped project. This project could be described as a “grouped project” and over time, as the Program secures more funding and can expand into areas of implementation (and therefore a pathway toward JNR Option 2). This approach allows the project to apply highly creditable and proven VCS standards and methodologies.

Afforestation/Reforestation (ARR)

For activities that seek to increase tree cover, these would be measured under VCS using an ARR methodology. Currently, VCS recognizes the CDM ARR methodologies but is in the process of creating their own. Regardless of which ARR methodology is used these activities would be included in the same Project Description at the REDD+ component of the Project.

9.1.5. VCS Project Eligibility Requirements

Forest Definition

To be eligible for VCS crediting, forests within the REDD Project Zone must meet nationally accepted definitions of what constitutes a forest. Forest definitions are assigned within United Nations Framework Convention for Climate Change (UNFCCC) host-country thresholds or by the Food and Agriculture Organization (FAO) definitions. According to the UNFCCC, a forest is formally defined by a minimum tree height, minimal area, and minimum canopy cover. The Designated National Authority (DNA) decides the exact values of these thresholds, which is the national administrative body that is responsible for all Clean Development Mechanism (CDM) carbon projects, and in addition accepted by other standards like the VCS. Uganda’s FREL defines forest as: “A minimum area of 1 Ha, minimum crown cover of 30% of trees able to attain a height of 4 meters and above” (Minty of Water and Enviroment, 2017). Based in the land use, land cover classification in the Project Area, this would correspond to woodland, other classes like plantations or tropical high forest are not present in the Project Area.

Uganda’s REDD+ Process is coordinated by the National Climate Change Advisory Committee (NCCAC). Administratively the Forestry Sector Support Department (FSSD) of the Ministry of Water and Environment (MWE) serves as the National Focal Point and REDD+ Secretariat and undertakes day-to-day management and technical coordination. The REDD+ Process is supported by three Task Forces, a National Technical Committee and NCCAC which serves as the REDD+ Steering Committee.

VCS Eligibility

This Program can initially begin registering, monitoring, and issuing credits in accordance with the VCS AFOLU standards using a Jurisdictional Baseline which is the same as the baseline developed under VM0006 for the AFOLU grouped project. Technically, this means that the Program could be applying

Option 1 as defined under the JNR Rules and Requirements and will monitor and verify by applying the detailed requirements of VM0006 as well as applying the CCB standard for the Project Area where implementation will be taking place. Over time, as the Program secures more funding and can expand into more areas of implementation, it has a pathway toward JNR Option 2. This approach allows the project to apply highly creditable and proven VCS standards and methodologies that allow for the direct crediting and quantification of the social and environmental impact of project activities to be measured under the CCB. The forward baseline can have a 30-year crediting period. The scope of activities in the forward baseline includes emissions from deforestation and degradation and removals from enhancements in forest areas during the crediting period.



Lomej Mountain - Uganda

Section 10. Carbon Estimates



10. CARBON ESTIMATES

This section contains carbon estimates for the Kidepo Valley Landscape Project Area that is being supported by USAID through the Biodiversity for Resilience (B4R) program, managed by RTI International. This section includes all information and assumptions used to generate these estimates. Carbon calculations are based on the best existing data sets and all assumptions are described. The Project methodology, Carbon Accounting for Grouped Mosaic and Landscape-Scale REDD Projects (VM0006), sets out the procedures for quantification of baseline emissions and removals. The carbon estimates for the Project Area as well as the Jurisdictional REDD+ Program Area (see section 0).

The main steps defined in VM0006, which also follow the requirements for a JNR baseline are detailed below.

10.1. Define a Valid Reference Region

To ensure that the approach applied for this study could be used to provide the carbon potential for both a Jurisdictional Program and the Project Area, the deforestation rates in both areas were calculated. Under the emerging AUDD standards, the reference region that would be used to determine the Project Area deforestation rate would need to be defined as the two watershed management areas. Then a process that applies a land-use change model (aka risk map) would be used to define the proportion of deforestation in the larger Jurisdictional Areas that occurs in the Project Area. This level of work is outside the scope of this study. But by having both the rates in the Jurisdictional Baseline Area of the Upper Nile and Kyoga water management area and the Project Area, we could determine what rate should be applied to the Project Area. And thus, the conditions required under VM0006 for reference region were applied.

Under VM0006, the following conditions are required to ensure the Reference Area is representative and unbiased:

- **Minimum size:** As required by the methodology, the Reference Region excluding the Project Area and Leakage Area has an area higher than 250,000 hectares. Jurisdictional Baseline Area totals 9,485,709 hectares after excluding the Project Area and the Leakage Area.
- **Boundaries unbiased:** The boundaries of the Reference Region coincide with water management areas defined by the government of Uganda, so land-use and land cover related policies are consistent across.
- **Accessible by agents of deforestation:** The Reference Region doesn't have areas with restricted access to the deforestation agents. Planned deforestation areas excluded: No known planned deforestation areas contained within the Reference Region.
- **Natural deforestation areas excluded:** No historic causes of spatially constrained natural deforestation observed within the Reference Region.
- **Includes >15% Forest cover:** The Exclusive Reference Region contains 8% forest cover at the beginning of historical period 2010 based on remote sensing analysis of land cover which does not meet this requirement due to a lack of suitable area.

- Comparable to Project Area across key variables: The selected Reference Region and Project Area are similar across several variables: drivers and agents of deforestation, forest types, Policies and Regulations.

10.2. Description of LULC and Forest Classes for Deforestation and Degradation

The methodology VM0006 requires that the LULC classification and stratification is applicable for both the Reference Region and the Project Area. Both regions were classified simultaneously using the same criteria. The LULC Classes are described in Section 3.4. Classes used in this study are summarized in Table 14.

Table 14. Forest and non-Forest Classes used for Deforestation.

National Biomass Study LULC Class	Kidepo Valley Feasibility LULC Class
Tropical High Forest	Closed Forest
Tropical High Forest Low stock	
Plantations and woodlots broadleaves	Open Forest
Plantations and woodlots coniferous	
Woodland	
Bushland	Non-Forest
Grassland	
Wetlands	
Subsistence farmland	
Commercial farmland	
Built up area	
Open water	Excluded
Impediments	

10.3. Allowed LULC Change Categories

Deforestation (DF) is the transition of a forest class to a non-forest class. Degradation of the transition from a forest class to another forest class with a lower carbon stock. Upon reforestation (RF), land can go from a non-forest class to the forest class with the lowest carbon density class. Enhancement (EN) is the transition of a low stocked class to a high stocked, in this case from Open Forest to Closed Forest (Table 15). Reforestation is allowed as a Project Activity under VM006 methodology however it is accounted for in spatially defined non-forest areas where activities are taking place. However, areas that are deforested during the crediting period are subject to reforestation and should be accounted for.

Table 15. Allowed Transitions between LULC in the Jurisdictional Baseline Area and Project Area

Transitions between LULC		Transition Type
From	To	
Open Forest (OF)	Non-Forest (NF)	Deforestation (DF)
Closed Forest (CF)	Non-Forest (NF)	Deforestation (DF)
Closed Forest (CF)	Open Forest (OF)	Degradation (DG)

Transitions between LULC		Transition Type
From	To	
Open Forest (OF)	Closed Forest (CF)	Enhancement (EN)
Non-Forest (NF)	Open Forest (OF)	Reforestation (RF)

Transitions from or to excluded classes (EX) were not allowed. Transitions from Non-Forest (NF) to Closed Forest are not allowed as these are not biophysically possible in the short to medium term.

10.4. Deforestation and Degradation in the Jurisdictional Baseline Area and in the Project Area

NFA provided classified images (2010, 2015 and 2017) covering all Upper Nile and Kyoga Water Management Zone. These images were used to identify the different Land Use Land Cover (LULC) Types across the Jurisdictional Baseline Area and the Project Area, then to classify them as Forest, t or non-Forest and to analyze changes between years that can be associated to deforestation, forest degradation or reforestation. For every pair of consecutive years, all possible transitions between LULC Types were analyzed and classified. Finally, some LULC Types were excluded from the analysis as they cannot be classified either as forest or not forest (Impediments, open water, wetlands). The Forest class was further divided into forest strata of “Closed Forest” and “Open Forest”. Tropical High Forest and Tropical High Forest Low Stock were classified as “Closed Forest”, Plantation and woodlots broadleaves, coniferous and Woodland were classified as “Open Forest”, these four LULC Types meet the national definition of forest⁴. The rest of the LULC types were classified as “non-Forest”. In Table 16 LULC info is summarized. Given the market standards only allow for historical periods that are at most 10 years and are moving toward shorter 6 years periods, only the 2015 and 2017 data were used for calculation of rates.

Table 16. Total forest area in the Jurisdictional Baseline Area and the Project Area

	Area (ha)	
	2015	2017
<i>Jurisdictional Baseline Area</i>		
Closed Forest (CF)	104,884	97,764
Open Forest (OF)	638,119	622,089
Total Forest Area	743,003	719,853
Non-forest (NF)	11,172,246	11,154,131
Excluded Classes	362,183	403,448
Total	12,277,432	12,277,432
<i>Project Area</i>		
Closed Forest (CF)	0	0
Open Forest (OF)	184,545	160,200

⁴ A minimum area of 1 Ha, minimum crown cover of 30% of trees able to attain a height of 4 meters and above (Mintiry of Water and Enviroment, 2017).

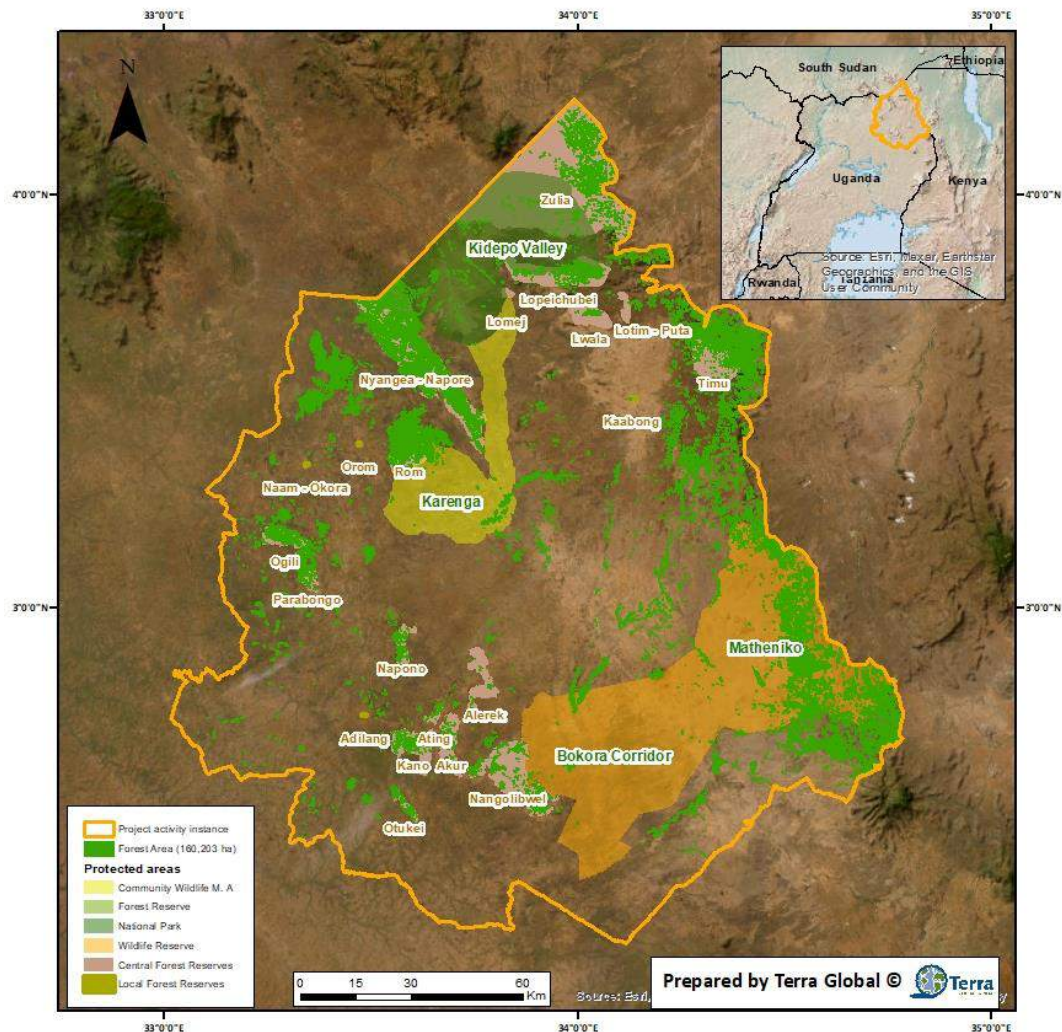
	Area (ha)	
	2015	2017
Total Forest Area	184,545	160,200
Non-forest (NF)	2,363,698	2,388,744
Excluded Classes	6,842	6,140
Total	2,555,085	2,555,085

Forest cover in the total Jurisdictional Baseline Area is 719,853 hectares and in the Project Area is 160,200 hectares in both cases showing an overall decline because of deforestation caused by population pressure and poverty. Charcoal production, fuelwood collection, and clearance for agriculture are some of the only sources of income for the increasing number of poor rural households and result in direct removal of forest biomass.

In Table 17 total area of forest and non-forest inside and outside protected areas is shown, 54% of forested areas are inside protected areas (CFR, LFR, WR and NP) and 46% is in private (communal) land.

Table 17. Total Forest Area for the Baseline in Protected Areas and Private Land within the Project Area

	Area (ha)	
	Protected areas	Private Land
Closed Forest (CF)	0	0
Open Forest (OF)	85,978	74,222
Non-forest (NF)	693,839	1,700,623
Excluded Classes	115	308
Total	779,932	1,775,153
Percentage	30%	70%



Map 5. Forest area in the baseline (2017) inside and outside protected areas.

The total future deforestation, degradation and reforestation rates are interpolated from past trends. For both the Jurisdictional Baseline Area and Project Area, transition rates between Closed Forest, Open Forest and non-Forest classes were calculated for each historical period (2010-2015 and 2015-2017).

Each transition between two land cover classes was classified as deforestation (e.g., from Open Forest to non-Forest), degradation (e.g., from Closed Forest to Open Forest), reforestation (e.g., from non-Forest to Open Forest) or enhancement (e.g., from Open Forest to Closed Forest). For every pair of subsequent images, the number of pixels that transitioned were calculated and summarized in a land-use change transition matrix, then the change between each transition was annualized, converted to hectares, and averaged across time periods. Finally, the average change was divided by the initial land cover class area to get the transition rate.

Historical deforestation, degradation, and reforestation rates for both Jurisdictional Baseline Area and Project Area and the conservative deforestation rate projection are shown in Table 18, Enhancement rates were insignificant and thus not included.

Table 18. Annual Deforestation, Degradation and Reforestation based on NFA (2015 - 2017) data.

	Jurisdictional Baseline Area	Project Area
Annual Deforestation Rate	2.97%	2.67%
Annual Degradation Rate	2.23%	0.00%
Annual Reforestation Rate	0.17%	0.30%
Annual Enhancement Rate	0.05%	0.00%

For comparison and to evaluate more recent data, the deforestation rates using Hansen, et al. (2022) data for 2015 to 2022 were evaluated. Hansen generally does a poor job of detecting deforestation in dry woodlands as are in the Jurisdictional Area and which are even more prevalent in the Project Area. To maximum the ability to compare the rates Hansen data with those from the NFA the thresholds for Hansen’s Forest definition was “calibrated” to match resulting Hansen date forest area as close as possible to the 2017 forest area from the NFA data. Table 19 shows forest cover between 2015 and 2022 according to Hansen et al. (2022) dataset. Numbers are comparable to NFA data, this figures were obtain by choosing the accurate tree cover threshold for each area based in the differences in the type of forest present in each area, for the Jurisdictional Baseline Area a 50% tree cover threshold was selected because forest in most of the reference region show higher levels of canopy cover in contrast with a 30% probability threshold chosen for the Project Area were because the area is drier Hansen model has a greater probability of not capturing this open canopy type of forest areas.

Table 19. Historical Forest cover using Hansen et al. (2022) data.

	Forest cover (ha)							
	2015	2016	2017	2018	2019	2020	2021	2022
Jurisdictional Baseline Area	883,373	872,464	856,781	829,669	810,170	790,772	770,339	756,462
Project Area	127,193	127,176	127,148	127,120	126,875	126,851	126,807	126,710

Table 20 shows an average annual deforestation rate of 1.8% for the whole Jurisdictional Baseline Area and 0.05% for the Project Area. Hansen et al (2022) data is especially valuable due to its high resolution of 30 meters, data forest loss since 2000, and its relatively high accuracy overall. However, the accuracy varies by biome and may be higher or lower in some regions. The model often misses forest loss in smallholder landscapes and in drier forest types and woodlands, resulting in lower accuracy of the data in Sub Saharan Africa, where this type of land use is common (Hansen, et al., 2013). The conclusion from this analysis is that rates within the Jurisdictional Program Area were of a similar magnitude as NFA rates 2.97% (NFA) and 1.80% (Hansen) but more important than the absolute rate is the observation that post 2017 rates (which was the last year for NFA) did not decline, and in fact if anything that increased. As it

relates to the comparison of Hansen in the Project Area, it appears that Hansen is not able to detect change in dry woodland forests, thus this data was not used.

Table 20. Annual Deforestation rates using Hansen et al. (2022) data.

	Annual Deforestation Rate							Average Annual Deforestation Rate
	2016	2017	2018	2019	2020	2021	2022	
Jurisdictional Baseline Area	1.2%	1.8%	3.2%	2.4%	2.4%	2.6%	1.8%	1.80%
Project Area	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%	0.05%

Under the VCS Standard’s current methodologies for Avoided Unplanned Deforestation and Forest Degradation, the deforestation rate is analyzed for the Jurisdictional Baseline Area (Reference Region) and then applied to the Project Area, however these methodologies are under revision, and in the future, an allocation of deforestation with pixel-specific risk of loss has to be conducted for the Project Area, as a proxy to this “allocation approach” for this study, calculations of specific Project Area deforestation rates were done.

Table 21. LULC transitions for the Jurisdictional Baseline Area and Project Area.

Period		Transition		Hectares	
From	To	From	To	Jurisdictional Baseline Area	Project Area
2015	2017	CF	CF	94,948	-
2015	2017	CF	EX	10	-
2015	2017	CF	NF	5,170	-
2015	2017	CF	OF	4,735	-
2015	2017	EX	CF	5	-
2015	2017	EX	EX	355,218	350
2015	2017	EX	NF	5,008	100
2015	2017	EX	OF	138	4
2015	2017	NF	CF	2,110	-
2015	2017	NF	EX	45,619	69
2015	2017	NF	NF	11,042,099	2,374,121
2015	2017	NF	OF	80,883	24,343
2015	2017	OF	CF	684	-
2015	2017	OF	EX	585	4
2015	2017	OF	NF	100,492	20,031
2015	2017	OF	OF	536,136	135,819

10.5. Carbon Stocks

For Avoided Unplanned Deforestation and Degradation carbon stock figures are used to identify emission factors as one LULC class transitions to another; for these purpose NFA provided information of mean biomass content per land cover class based on the National Biomass Study updated in 2019 (Table 22)).

Table 22. Mean biomass content per land cover class (NFA, 2019)

Land Cover and Land Use	IPCC Class	Aboveground Biomass Mg DM ha ⁻¹	Belowground Biomass Mg DM ha ⁻¹
Plantations and woodlots broadleaves	Forest	81.69	19.61
Plantations and woodlots coniferous	Forest	56.33	13.52
Tropical High Forest	Forest	347.99	83.52
Tropical High Forest Low stock	Forest	232.25	55.74
Woodland	Forest	16.47	3.95
Bushland	Bushland (Rangeland)	14.83	6.97
Grassland	Grassland (Rangeland)	10.12	16.19
Wetlands	Wetland	5.88	1.41
Subsistence farmland	Crop land	13.83	3.32
Commercial farmland	Crop land	3.46	0.83
Built up area	Settlement	17.61	4.23
Open water	Wetland	0.00	0.00
Impediments	Other Land	0.00	0.00

Since land covers in Table 4 and Table 5 were combined into Closed Forest, Open Forest and Non-Forest areas, values of mean above ground and belowground biomass were averaged including only those classes present either in the Project Area or the Jurisdictional Baseline Area (Table 23).

Table 23. Mean biomass content per land cover class used in the study.

LULC Class	Average AGB Mg DM ha ⁻¹	Average BGB Mg DM ha ⁻¹
Closed Forest	290.1	69.6
Open Forest	51.5	12.4
Non-Forest	11.0	5.5
Excluded	-	-

For the Project Area, only the class transitions related to deforestation (DF) and consequently reforestation (RF) were included and emissions factors for those transitions were determined. These include transition from Closed Forest (CF) to Non-Forest (NF) and transition from Open Forest (OF) to Non-Forest (NF). Like deforestation, transitions leading to increase in forest cover i.e., Non-Forests (NF) to Open Forest (OF) were also included. As degradation was not included in emissions accounting, transitions related to degradation or enhancement of carbon stocks i.e., class transitions within forest classes (i.e., OF to CF) were excluded.

Above and below-ground biomass and carbon stock for each of the three cover classes included in the transitions namely Closed Forest (CF), Open Forest (OF), and Non-Forest (NF) were estimated from the mean biomass content provided by NFA.

Emission factors only include the carbon pool-related sources due to changes in carbon stock densities between the LULC classes and forest strata. Emission Factors were then calculated according to the formulas set out in Methodology VM006 Section 8.1.4.5.

Table 24. Emission factors

Transition		Emission Factor for Above Ground Live pool [tCO ₂ ha ⁻¹]	Emission Factor for Belowground live pool if t <= 10 [tCO ₂ ha ⁻¹]
From	To		
OF	NF	-148.7	-25.2
NF	OF	148.7	25.2

10.6. Temporal Boundaries of the Baseline

The temporal boundaries of the project are as follows:

- Historical period for estimating rates from 2015-2017
- Project crediting period: 30 years (2021 – 2051)
- Verification frequency: annual to periodic
- Frequency of baseline update: 10 years

10.7. Leakage

The Jurisdictional Program is designed to as a landscape-level approach to creating sustainable systems. Leakage is stopped though Program Actions, with the intention of solving issues where they are. There are three types of leakage that are accounted for 1) Activity-shifting geographically unconstrained, 2) Activity-shifting geographically constrained and 3) market leakage.

Activity-shifting geographically constrained leakage is estimated *ex-ante*, but actual emissions are based on actual leakage calculated with Program monitoring data based on a delineated Leakage Area where activity-shifting will take place. For activity-shifting geographically constrained leakage a standard of 5 kilometers around the Project Area is used. At this time activity-shifting geographically un-constrained leakage is determined to be de minimis as most drivers are subsistence based. Market leakage for Unplanned Deforestation and Degradation would be expected to be insignificant thus a value of zero was applied.

10.8. Net GHG Emission Reductions and Removals

The emission reductions from the Kidepo Valley Landscape Program will be generated from avoided unplanned deforestation. A Program-wide buffer pool of 10% is deducted based on the non-Permanence risk as described in Section 15.

JURISDICTIONAL PROGRAM CARBON PROJECTIONS

The feasibility study conducted, in part, to determine whether private sector climate finance could be viable for the Project Area. Based on the estimated cash flow, the cumulative net income (after covering core implementation and VCU developing costs) is strong over the Project's first 17 years, totaling just under \$USD 45 million. But the Project fails to break even on a cumulative basis until Year 10 of Project Activities without an upfront investment or other source of capital. However, the Project covers its costs from carbon revenue on an annual basis starting in year 6. If the Project can blend donor/grant funding with a private sector upfront climate finance investment, it should be able to make the Project positive cash and long-term financially sustainable on sale of VCUs. An upfront climate finance investment would be paid back with discounted VCUs over the Project's first 1-4 verifications, and the investor would purchase forward VCUs from the Project (Section 13). And while there is the possibility for the Project Area alone to secure financing, most investors would be interested in supporting activities across the wide jurisdiction to reach scale. Thus, in addition to the Project level analysis that was the focus of this study, the carbon potential for a Jurisdictional REDD+ Program was also estimated.

Table 32 show the carbon estimates for the Jurisdictional Area that includes the area of both Upper Nile and Kyoga water management zones. The deforestation, degradation, reforestation, and enhancement rates in Table 18 were applied, resulting in a total cumulative VCUs of 94,691,656 over 30 years.

Table 32. Upper Nile and Kyoga Water management Areas Program Summary of Emission Reductions and Removals

Year	Year #	Estimated baseline emissions or removals (tCO2e)	Estimated project emissions or removals (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated net GHG emission reductions or removals (tCO2e)	Buffer	Annual VCU	Cum VCUs
		[tCO2e]	[tCO2e]	[tCO2e]	[tCO2e]	[tCO2e yr-1]	[t yr-1]	[t]
2021	1	3,717,255	3,628,929	391	87,935	8,793	79,141	79,141
2022	2	4,249,576	3,993,088	3,201	253,287	25,329	227,958	307,100
2023	3	4,781,012	4,168,774	17,999	594,239	59,424	534,815	841,915
2024	4	5,311,565	4,672,146	16,874	622,546	62,255	560,291	1,402,206
2025	5	5,841,237	4,697,569	53,777	1,089,890	108,989	980,901	2,383,107
2026	6	6,370,028	5,151,940	54,012	1,164,076	116,408	1,047,669	3,430,776
2027	7	6,897,940	5,356,854	81,230	1,459,857	145,986	1,313,871	4,744,647
2028	8	7,424,975	5,532,841	115,794	1,776,340	177,634	1,598,706	6,343,353
2029	9	7,951,134	5,679,977	158,319	2,112,838	211,284	1,901,554	8,244,907
2030	10	8,476,419	5,798,281	209,417	2,468,720	246,872	2,221,848	10,466,756
2031	11	8,462,331	5,392,858	263,759	2,805,714	280,571	2,525,143	12,991,899
2032	12	8,448,267	4,986,502	325,480	3,136,285	313,629	2,822,657	15,814,555
2033	13	8,434,226	4,760,336	358,108	3,315,783	331,578	2,984,205	18,798,760
2034	14	8,420,209	4,488,341	399,326	3,532,541	353,254	3,179,287	21,978,047
2035	15	8,406,215	4,272,532	437,313	3,696,370	369,637	3,326,733	25,304,780
2036	16	8,392,244	4,041,632	478,148	3,872,465	387,246	3,485,218	28,789,998
2037	17	8,378,297	3,832,957	517,829	4,027,510	402,751	3,624,759	32,414,758
2038	18	8,364,372	3,646,489	555,760	4,162,124	416,212	3,745,912	36,160,669
2039	19	8,350,471	3,482,158	591,370	4,276,943	427,694	3,849,249	40,009,918
2040	20	8,336,593	3,339,945	624,063	4,372,585	437,258	3,935,326	43,945,245
2041	21	8,322,738	3,215,358	654,125	4,453,255	445,325	4,007,929	47,953,174
2042	22	8,308,906	3,195,945	656,972	4,455,989	445,599	4,010,390	51,963,563
2043	23	8,295,097	3,096,302	681,653	4,517,142	451,714	4,065,428	56,028,991
2044	24	8,281,311	2,996,822	706,871	4,577,618	457,762	4,119,856	60,148,848
2045	25	8,267,548	2,943,962	718,845	4,604,740	460,474	4,144,266	64,293,114
2046	26	8,253,807	2,897,921	729,093	4,626,794	462,679	4,164,115	68,457,229
2047	27	8,240,090	2,858,685	737,575	4,643,830	464,383	4,179,447	72,636,676
2048	28	8,226,395	2,826,242	744,258	4,655,895	465,590	4,190,306	76,826,982
2049	29	8,212,723	2,800,583	749,102	4,663,038	466,304	4,196,734	81,023,716
2050	30	8,199,074	2,781,696	752,073	4,665,305	466,530	4,198,774	85,222,490
Total		227,622,056	120,537,663	12,392,737	94,691,656	9,469,166	85,222,490	94,691,656
tCO2/ha		316	167	17	132	13	118	132
tCO2/ha/yr		10.5	5.6	0.6	4.4	0.4	3.9	4.4

PROJECT RISK Table 25. Kidepo Valley Landscape Project Summary of Emission Reductions and Removals

	Year #	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)	Buffer	Annual VCU	Cum VCUs
		[tCO ₂ e]	[tCO ₂ e]	[tCO ₂ e]	[tCO ₂ e]	[tCO ₂ e yr-1]	[t yr-1]	[t]
2021	1	744,725	727,028	78	17,618	1,762	15,856	15,856
2022	2	850,380	799,020	637	50,723	5,072	45,651	61,507
2023	3	955,719	833,159	3,605	118,955	11,896	107,060	168,567
2024	4	1,060,743	932,896	3,382	124,465	12,447	112,019	280,585
2025	5	1,165,453	936,754	10,769	217,930	21,793	196,137	476,722
2026	6	1,269,849	1,026,548	10,793	232,508	23,251	209,257	685,980
2027	7	1,373,933	1,066,234	16,236	291,463	29,146	262,316	948,296
2028	8	1,477,705	1,100,092	23,140	354,474	35,447	319,026	1,267,322
2029	9	1,581,167	1,128,125	31,625	421,418	42,142	379,276	1,646,598
2030	10	1,684,319	1,150,335	41,826	492,158	49,216	442,942	2,089,540
2031	11	1,679,278	1,067,596	52,650	559,031	55,903	503,128	2,592,668
2032	12	1,674,252	984,786	64,949	624,516	62,452	562,065	3,154,733
2033	13	1,669,241	938,185	71,402	659,655	65,965	593,689	3,748,422
2034	14	1,664,245	882,479	79,564	702,203	70,220	631,983	4,380,405
2035	15	1,659,264	838,094	87,061	734,110	73,411	660,699	5,041,103
2036	16	1,654,298	790,746	95,129	768,424	76,842	691,581	5,732,685
2037	17	1,649,347	747,916	102,961	798,470	79,847	718,623	6,451,308
2038	18	1,644,411	709,605	110,427	824,379	82,438	741,941	7,193,249
2039	19	1,639,489	675,770	117,410	846,310	84,631	761,679	7,954,928
2040	20	1,634,583	646,413	123,806	864,363	86,436	777,927	8,732,855
2041	21	1,629,691	620,628	129,675	879,388	87,939	791,449	9,524,304
2042	22	1,624,813	615,960	130,067	878,786	87,879	790,908	10,315,211
2043	23	1,619,950	595,216	134,843	889,891	88,989	800,902	11,116,114
2044	24	1,615,102	574,532	139,723	900,846	90,085	810,762	11,926,875
2045	25	1,610,268	563,220	141,941	905,107	90,511	814,596	12,741,471
2046	26	1,605,449	553,291	143,810	908,348	90,835	817,513	13,558,984
2047	27	1,600,644	544,739	145,322	910,582	91,058	819,524	14,378,508
2048	28	1,595,853	537,560	146,472	911,821	91,182	820,639	15,199,147
2049	29	1,591,077	531,751	147,253	912,073	91,207	820,865	16,020,012
2050	30	1,586,315	527,308	147,658	911,349	91,135	820,214	16,840,226
Total		44,811,563	23,645,987	2,454,214	18,711,362	1,871,136	16,840,226	18,711,362
tCO ₂ /ha		280	148	15	117	12	105	117
tCO ₂ /ha/yr		9.3	4.9	0.5	3.9	0.4	3.5	3.9



Community Meeting in Abim District- Uganda

Section 11. Securing Private Sector Climate Finance



11. SECURING PRIVATE SECTOR CLIMATE FINANCE

The process for securing private sector climate finance will vary from investor to investor. Below is a summary of the process used by the Terra Bella Nature-based Solutions Carbon Pool, managed by an affiliate of Terra Global.

11.1. Process to Secure Climate Finance Investment

The stages for moving from feasibility to completing and investment agreement, are outlined in Figure 17. The completion of the Feasibility phase which will, among other things, include high level estimates of carbon revenue potential, rough budget projections and projected cashflow, will provide the ability to develop a letter of investment intent that provides the estimated upfront investment, range of pricing terms and target milestone delivery requirements and dates. After signing the investment LOI the Program moves into the Investment Readiness Phase.

Figure 17 provides a more detailed visual of the main components of work to move from the investment LOI to Signing of the Program Investment Agreement.

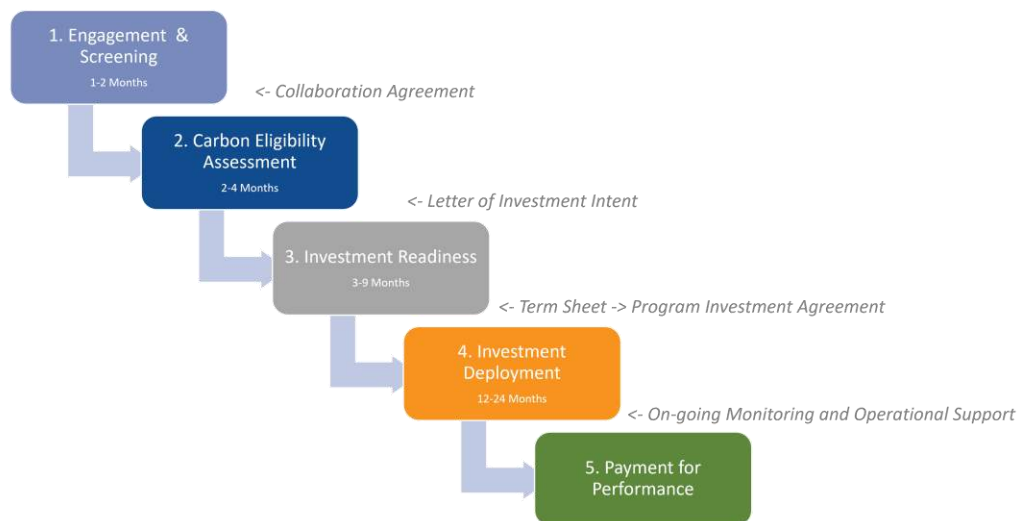


Figure 17. Stages and Components of Securing Climate Finance

11.2. Investment Readiness Requirements

Upon completion of the Feasibility phase and after the signing of an investment letter of intent, the project partners will move into the Investment Readiness Phase of co-developing the Kidepo Valley Landscape Project. During this period, there are several requirements that will be developed as well as the determination of how the Project will be managed operationally, fiscally, and legally. As this Project will need an upfront climate finance investment from a private sector company, there will be requirements that will be structured differently, and additional requirements will also need to be met.

11.2.1. Program Implementation Work Plan

This feasibility study provides the initial draft of an implementation workplan and description of activities in Section 8.4. This workplan will need to be adjusted and expanded based on input from the project partners, local communities (and organized community groups) who will support implementation in Kidepo Valley Landscape and other stakeholders. This Long-Term (15 years) Implementation Workplan will be designed around a sound theory of change (TOC) that reflects the specific objectives (Section 8.3) desired by the Program, and maps activities and outputs needed to achieve them.

During the Investment Readiness Phase support will be provided to develop a detailed implementation workplan which will include Sub-Objectives (these are the components needed to achieve the overall Project objective organized by core implementors), Outcomes, Activities.

For each activity defined in the long-term Implementation Workplan, the following will be identified:

- Lead Implementer
- Supporting Implementor
- Implementation Period (years)
- Priority of Activity
- Monitoring Indicators (with units and disaggregation)
- Targets for indicators

11.2.2. Program Implementation Budget

To ensure the Project will have the funding needed to implement activities and reach long-term financial sustainability including the initial upfront investment need it and then the purchase payment on delivery of verified emission reductions and removals through [2050], it is critical to complete the Project Financial Plan that covers at least 15 years.

The objectives of Project's Financial Planning include:

- **Jurisdictional Project Administration and Management Costs:** These are the incremental budgetary expenditures that the institution(s) responsible for managing the Project implementation will incur to manage and administer the Project including readiness costs to establish the Project and the on-going costs to oversee implementation and other Project requirements, not related directly to implementing on the ground.
- **Jurisdictional Government Implementation Support Costs:** The expected costs for the jurisdictional government agencies to support activities that directly impact land-use management, such as training and technical assistance, inputs for improved management, subsidies, government guarantee funds, and other government programs that are directly tied to changing land-use in a spatially defined area.
- **Project Activities Costs:** The expected costs and revenues associated with Program related land use activities or actions implemented by land managers (government, private, community) that reduce emissions and/or enhance carbon stocks within the framework of the Program.

Leveraging the budgeting work that has been done for the Kidepo Valley Landscape Project and one set of cost estimates provided by RTI for different conservation, restoration and livelihood activities, an initial

extremely rough budget was developed for the Project based on targeted areas. During the Investment Readiness phase, this budget will need to be revised to provide a detailed activity-based budget with all the required costs to achieve the target outcomes. This process will be iterative with The Project Developer working with the Project Proponent and Implementation Partners.

11.2.3. Entities, Agreements and Governance

To facilitate a private sector climate finance transaction, there needs to be a “investee entity” and there also needs to be independent management of fiscal resources for at least the initial years of the Project. This is an entity that will sign the investment agreement, have title to VERRs, and will be legally obligated to terms of the investment agreement and to oversee the implementation the Project activities (through government and non-government implementing partners), administer benefits allocation, coordinate monitoring data collection, manage grievance and redress, and transfer title to verified emission reductions and removals to the investor.

Typically, for private sector investments there is a Special Purpose Vehicle (SPV) established that supports the management of the Program. For Jurisdictional Programs this entity is generally staffed with government people, and the entity’s form will depend on the local laws that best align ownership of carbon, devolving to target beneficiaries, tax treatment and other considerations.

11.2.4. Project Management and Operations Manual

The manual sets out all the procedures and policies that are used to manage the SPV (Management Entity). This manual will generally cover the following topics:

- 1) Introduction
- 2) Context of the Program
- 3) Project Management Team
- 4) Project Policy for Contracting Project Team and Other Project Consultants
 - a) Position Description and Position Publication
 - b) Receipt Of Applications and Short-Term Candidates
 - c) Verification Of References
 - d) Hiring Decision
 - e) New Employee/Contractor Checklist and On-boarding
- 5) Contracting for the Provision of Goods and Services (Procurement)
- 6) Fleet Management Policy
- 7) General Rules of Conduct (including Anti-corruption and Human Trafficking)
- 8) Health and Safety Management System
- 9) Control of Documentary Information and Data
- 10) Other Relevant Policies

This will be developed as part of the establishment and staffing of the SPV Investee/Management Entity during the Investment Readiness Phase. This manual will leverage many of the existing Uganda government policies, but these requirements will need to support the Climate Finance Provider requirements and code of conduct, which could require additional requirements that are relevant for an investment-based transaction.

11.2.5. Fiscal Management Procedures

The fiscal management procedures for the Project will cover all the entities that manage and receive funding from the Project. This will include a detailed set of policies and procedures for the SPV Investee/Management. The documented procedures will describe the process of how the Project will send, receive, and supervise all the resources for its implementation. The documented procedures will cover the key components of fiscal management necessary for the Project. All participants in the Project must follow the procedures.

Private investors require that there are tight controls on funds to ensure that funds are channeled to the agreed activities and parties. This generally involves a “fiscal manager” and is required at least until the repayment of the upfront amount has been completed. This means that funding is generally provided to management entity and implementing entities-based performance milestones and on quarterly advance and liquidation process. The advance and liquidation process is supported by the fiscal manager who generally manages a dedicated and segregated account for the Project, which provides advances to the management entity and implementing partners.

11.2.6. Benefit Allocation Plan

The benefits allocation plan (or at minimum the Benefits Allocation Principals) must be developed prior to funding being provided. Initially funding for the Project will be spent on the Project management and the implementation of the Project activities. But having agreement on the longer-term use of net proceeds beyond the implementation costs of the Project is important to define as part of the Investment Agreement. Typically, the creation of a detailed Benefit Allocation Plan takes several months and a fair amount of community and stakeholder engagement to meet the Investment Readiness Requirements. To be included in the Investment Agreement there will need to be a set of agreed benefits allocation principles. The final Benefits Allocation Plan will be developed with full consent of the Project Implementors, and Communities as facilitated by NFA, UWA, Climate Finance Provider and Technical Advisor. The Benefits Allocation Principals will also specify a waterfall structure for the methodology that will be used for benefits allocation.

11.2.7. Grievance Redress Mechanism

The Kidepo Valley Landscape Project will need to have a clear and documented Grievance and Redress Procedure prior to investment.

11.2.8. Program Monitoring Plans

There are two main levels of monitoring that will be undertaken for the Project. Components of these will be the obligations under the Investment Agreement, Implementation Agreement, and the market standards to be used for this Project. These monitoring requires are specified in detail and included in all the contractual agreements used for the Project.

Operational Performance Monitoring

These are the indicators (and associated targets) for data collected to determine how effective the Projects implementors are in implementing the activities on the Long-term Implementation Plan

Indicators. As the implementation plan defines the verifiable indicators for each activity and targets based on the budget, this data is primarily provided by implementation partners (in accordance with their agreements) and prepared by the Project Management Team. This data collection is done on an on-going basis to track the status of implementation versus the targets. This reports on how successful the Project is at implementing their workplan.

Impact Monitoring Plans

Impact monitoring is primarily done under the requirements of the selected market standards, and it is designed to measure whether the implementation of activities in the workplan is producing the target outcomes and objectives of the Project. The core impacts that will be measured, monitored and 3rd-party verified will be 1) Climate Mitigation Impact (# VERRs), 2) Community Impacts (where indicators are customized for the Project and link to well-being), 3) Biodiversity Impacts (where indicators are customized for the Project Area), 4) Climate Adaption Impacts (where indicators are customized to capture the increased resilience of people and ecological systems of the Project Area).

In addition to these two groups of indicators, the Climate Finance Provider may require specific additional monitoring and reporting that they would like to be provided.

11.2.9. Gender and Unrepresented Population Plan

The Kidepo Valley Landscape Project will need to have a plan to include women and underrepresented groups in Program planning, and implementation.

11.2.10. REDD+ Agreement

To ensure the long-term permanence of the emission reductions and removals from the Project there is a REDD+ agreement signed between the project owners and the party who support over the long-term the monitoring and verify the emission reductions and removals (Project Developer: e.g., Terra Global Capital).

Abim District - Uganda

Section 12. Implementation and Management Coordination



12. IMPLEMENTATION AND MANAGEMENT COORDINATION

The implementation of the activities on the ground will be conducted by a network of actors, depending on where the activities are being implemented and what activities are being undertaken. These implementing partners and the roles they will play need to be more clearly defined as part of the completion of the work planning process. Initial indicators of the Lead and Supporting Implementors is included in Table 26.

12.1.1. Identified as Potential Core Implementers

Initial indicators of the Lead and Supporting Implementors is included in Table 26.

Table 26. Summary of Program Implementors

Implementor	Area	Summary of Roles and Responsibilities
Climate Change Department (CCD)	Jurisdictional baseline area	Provide national and institutional oversight
Uganda Biodiversity Fund (UBF)	Jurisdictional baseline area	Independent Trust, is engaged in mobilizing, managing, and channeling financial resources for biodiversity conservation and sustainable use of natural resources. UBF could be a potential project proponent and implementing partner. They have work experience in Karamoja and Acholi subregions (Project Area) with beekeeping, tree planting, cookstoves, forest restoration and wetland restoration, community-based associations support through agreements with individuals and communities.
RTI International	Kidepo Valley Landscape	Through USAID Uganda Biodiversity for Resilience (B4R) has been supporting Community-based wildlife management using the approach of the “conservancy model” in Kidepo Valley Landscape. RTI has been implementing Project activities in the landscape since 2020.
National Forestry Authority (NFA)	Central Forest Reserves (CFR)	NFA is mandated by the National forestry and tree planting act, to manage forests gazetted by the national parliament as Central Forest Reserves (CFRs). Increase Forest Reserve protection, fire control, engagement with communities to support On-Reserve management.
Uganda Wildlife Authority (UWA)	Kidepo Valley National Park, Karenga Community Wildlife Area, Bokora Corridor and Matheniko Wildlife Sanctuaries	Uganda Wildlife Authority (UWA) manages all forests found inside national parks, Wildlife Reserves, and Wildlife Sanctuaries and guides the management of Community Wildlife Areas.
	Local Forest Reserves	At district and lower levels of government administration manage Local Forest Reserves (LFRs).

Implementor	Area	Summary of Roles and Responsibilities
District Departments of Forest Services	Private forest	Together with the NFA, are responsible for providing technical support to private/community forests.
Clan Leaders	Private forest	Communities in the Project Area are composed of clans, each headed by clan leaders and a council of Elders, with the main function of guiding communities, solving disputes, and keeping peace and unity. These leaders are the social-cultural figure in the community and play a paramount role in access and use of land under the customary tenure arrangement
Farmers and local communities	Protected areas	Establish CFM Groups for improved Natural Resources Management. Natural Resources Use (e.g., Fuelwood)
	Private forest	Natural Resource use (e.g., Fuelwood, Timber logging, crops, livestock)
Kaabong, Kotido Abim, Kitgum, Karenga, and Agago Community Association (KKAKKA CWA)	Private forest	One of the formally registered groups in the Project Area. They cover the districts of Kaabong, Kotido Abim, Kitgum, Karenga, and Agago (KKAKKA CWA) and work with community wildlife scouts (CWS) members who volunteer to guard crops and livestock- maintaining barriers to prevent wildlife raids. KKAKKAA CWA is key in engagements and negotiations. While the KKAKKAA CWA and wildlife scouts' members focus on wild-life community co-existence.

12.1.2. Other Potential Supporting Implementing Partners

If the Project needs to bring in additional technical support for implementation, it could consider active Entities, NGOs and Private companies working in the Project Area summarized in Table 27.

Table 27. Potential Supporting Partners for Kidepo Valley Landscape Project

Kijani Forestry	Working in partnership with B4R in Kidepo Valley, providing smallholder farmers with high-quality, low-cost tree seedlings to grow on their land to produce charcoal, relieving pressure on standing forests. They plant a diversity of tree species for both timber and charcoal. Kijani works through a “Nursery Hub” model, where they establish many rural nurseries to grow seedlings and provide training to groups of farmers looking to partner with them.
Wildlife Conservation Society	WCS has been supporting conservation in Uganda since 1957. Some of their previous collaborations include supporting the conservation of Kibale Forest between the 1970s and 1980s and establishing the Makerere University Biological Field Station in Kibale forest. In Uganda WCS currently focus on three key landscapes: Greater Virunga Landscape, Murchison-Semliki Landscape, and the Kidepo Landscape. While WCS is not currently operating in the Project Area has experience in implementing similar carbon programs in the Murrchson -Semiliki landscape.

<p>ACTED</p>	<p>ACTED has been working in Uganda since 2007 and has offices in the capital, Kampala, and in Karamoja, and the organization is currently implementing projects in Nakasongola and Mbarara Districts, and in Nakapiripirit District, Karamoja. Projects in Karamoja are aimed at improving the lives, livelihoods, and resilience of agro-pastoral communities in arid and semi-arid locations. ACTED’s programs in Nakapiripirit District-Karamoja, have supported communities in developing water-harvesting earthworks, improving grazing practices, and developing year-round vegetable gardens.</p>
<p>VSF (Veterinaires sans Frontieres)</p>	<p>VSF is a network of non-profit organizations working all over the world to support small-scale farmers and livestock keepers. VSF focuses on the most vulnerable rural populations and acts collectively to advocate in favor of small-scale family farming and livestock keeping, pastoralism, animal and human health, and a healthy environment. In Karamoja, VSF provides livestock (e.g., goats -larger than the local goats and produce more milk), builds better goat shelters, supports local water and grazing committees, builds, and maintains wells, and makes agreements on where to graze. VSF also advocates for livestock keepers’ land rights and facilitates dialogue between ethnic groups to reach agreements on resource sharing. Some of their Local partners include Matheniko Development Forum (MADEFO) and Dodoth Agro-Pastoral Development Organization (DADO).</p>
<p>The Environmental Conservation Trust of Uganda (ECOTRUST)</p>	<p>ECOTRUST is a not-for-profit conservation organization established in Uganda in 1999 to conserve biological diversity and enhance social welfare by promoting innovative and sustainable environmental management. ECOTRUST operates across Uganda with a focus on three main landscapes: Queen Elizabeth National Park landscape and Murchison-Semliki landscape in the Albertine region of South-Western Uganda, and the Mount Elgon Landscape in Eastern Uganda. ECOTRUST has a developed system in conservation finance – raising and managing capital to support land, water, and resource conservation – through the establishment of investment mechanisms that activate cashflows generated by the sustainable management of an ecosystem. Their focus is restoration as a business – balancing reforestation and livelihoods.</p>
<p>Kara-Tunga Foundation (KTF)</p>	<p>Ugandan not-for-profit organisation which aims at fostering peace, prosperity, and conservation through eco-tourism development in the countries northeastern Karamoja sub-region. KTF is a Kara-Tunga initiative to develop, manage, monitor and operate all the companies community development related activities. KTF is funded by a conservation levy when staying at our eco-camps, community development fees part of excursions, donors and well-wishers. KTF partners with organised community groups to support programs focusing on education, conservation, and livelihoods.</p>

**Golden Bees
Ltd**

An innovative social enterprise providing a full-scale range of beekeeping products and services. Has a network of over 2,000 smallholder beekeepers in Uganda and works through an out-grower scheme linking farmers to its regional honey shops.

12.1.3. Structure of Institutional Arrangements for Private Sector Climate Finance

The management structure, legal entities, contractual agreements, and governance arrangements for the Project that would include nesting within a jurisdictional baseline that covers the two watershed management areas, would be developed in detail during the investment readiness phase of deploying climate finance. This section provides an outline of the Management Structure and Institutional Arrangements that could support the Project.

Management Structure

To establish a nested jurisdictional program that can support a private sector investment into the Project Area (and other areas potentially in the future), there will need to be a small Jurisdictional Nested Program Management Team (JNP-MT). In addition, for each Project within the jurisdiction, such as the Kidepo Valley Greater Landscape Project, that would be seeking to secure climate finance, there would be a specific Project Management Team. The roles of these teams, and types of staff is outlined below. However, the exact functions would be part of reviewing and establishing the Program which would be done in coordination with the government.

Jurisdictional Nested Program Management Team (JNP-MT)

This team would be staffed with 1-2 members from/hired by government, who are provided technical support from the experience nested program developer to oversee the FREL and climate finance in the jurisdiction. They would act as the umbrella for coordination of climate finance funded activities within the jurisdictional area that includes the two watershed management areas. The role of this small team would include the following:

- Interface for actors seeking to provide climate finance in the jurisdictional area.
- Coordinate/oversee with technical contractor that will support the development of a FREL and on-going monitoring under market standards.
- Coordination with national REDD+ for NDC reporting, leveraging of GHG work, carbon related laws, and other areas to ensure alignment of the Jurisdictional Program, and the Projects being implemented within.
- Facilitate governance structures that are established for overall Jurisdictional Program oversight and Project level governance structures.
- Establish processes for submitting and recording projects to be funded with climate finance within the jurisdiction.
- Find leverage and synergies between Projects being implemented within the jurisdiction.

Kidepo Valley Greater Landscape Project Management Team (KVGL-MT)

If the Project moves forward with funding from private sector climate finance, a local project management team would be established, who would be responsible for the overall coordination, engagement, and on-going monitoring of results for implementation of Project Activities. This would be staffed with a combination of local technical experts and possibly government secondees. This entity manages the operational and fiscal aspects of the program. Initially, this team could leverage some of the work done under the USAID/Uganda Biodiversity for Resilience (B4R) program, but this team would be “stand alone” and focused on overall Project implementation and interface with the investor. This team should be housed within a newly established SPV/Trust setup for the Project. This would be determined as part of the investment readiness phase, but at minimum a detailed program operational manual covering all the roles and responsibilities of the KVGL-MT would be established prior to deploying an investment.

The activities and responsibility of the KVGL-MT would include:

- Oversight of implementation of activities in workplan and budget
- Management of the Project’s selected implementors including all government agencies directly involved.
- Oversight of use of funds and administration of the benefits allocation plan
- Collection of implementation monitoring data and coordination of field data collection
- Management of feedback, grievance, and redress process
- Working with the carbon development technical provider to meet the requirements under market standards.
- Engagement of all community groups participating (directly and through project partners)
- Providing regular updates and coordination with the JNP-MT
- Implementation of policies and practices within the Project that ensure anticorruption, fiscal accountability, and informed consent from participating and impacted communities.
- Coordination of signing of any agreements required to support the Project in implementation, VERR generation and securing carbon tenure.

12.1.4. Institutional Agreements

The exact institutional structure will depend on several factors that relate to land tenure, participating tenure holders, implementing entities, local laws and requirements under market standards. The structure of the institutional arrangements and the agreements will be fully developed in the investment readiness phase, but to meet the requirements of private sector, there needs to be long-term agreements in place that contractually bind tenure holders, implementors, and entities who may have carbon tenure secured to support the program during the VERR crediting period and beyond. Figure 18 provides an outline of the key components of the required institutional arrangements. However, the final arrangements will need to define government level and agency to sign an investment agreement or at minimum a support letter. In addition, a governance structure for both the administration of the jurisdictional FREL and the Project implementation across the diverse group of participating tenure holders in the Project Area will need to be established.

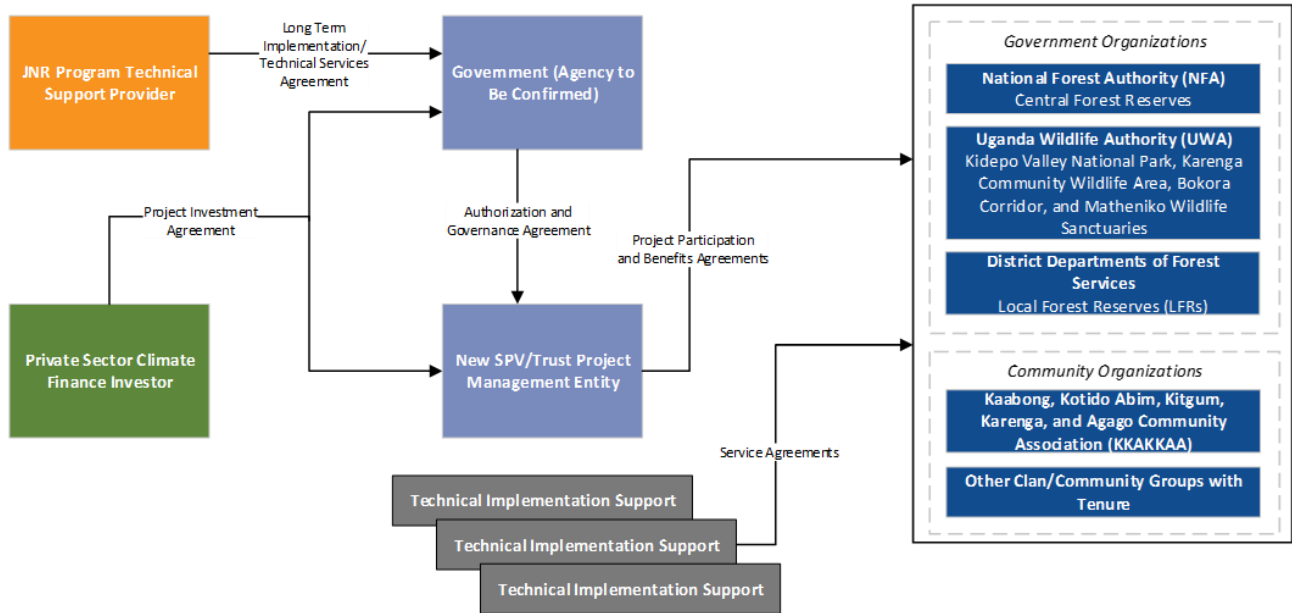


Figure 18. Typical Institutional Structure and Key Agreements for Private Sector Climate Finance



Traditional Acholi homestead Agago District- Uganda

Section 13. Financial Projection for Project Area



13. FINANCIAL PROJECTIONS FOR PROJECT AREA

13.1. Implementation Costs Estimates

With key inputs from RTI, a detailed draft implementation budget was developed for implementing the activities defined in the Implementation Work Plan in the Project Area over 20 years. If the Project seeks to move forward with Climate Finance, this budget and the timing of expenditures will need to continue to be evaluated based on other sources of blended finance that may be available and the terms that would be available from private sector climate finance providers.

Budget Period #	2023	2024	2025	2026	2027	2028	2029	2030	2031
Budget Year	1 Yr	2 Yr	3 Yr	4 Yr	5 Yr	6 Yr	7 Yr	8 Yr	9 Yr
Program Budget									
Program Management and Field Operational Support	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Director	\$10,000	\$10,500	\$11,025	\$11,576	\$12,155	\$12,763	\$13,401	\$14,071	\$14,775
Project Manager (operations)	\$6,000	\$6,300	\$6,615	\$6,946	\$7,293	\$7,658	\$8,041	\$8,443	\$8,865
Governance Advisor	\$2,500	\$2,625	\$2,756	\$2,894	\$3,039	\$3,191	\$3,350	\$3,518	\$3,694
Community Engagement Manager	\$3,125	\$3,281	\$3,445	\$14,470	\$15,194	\$15,954	\$16,751	\$17,589	\$18,468
Conservation Director	\$4,000	\$4,200	\$4,410	\$4,631	\$4,862	\$5,105	\$5,360	\$5,628	\$5,910
Enterprise Development Specialist	\$4,375	\$4,594	\$4,823	\$20,258	\$21,271	\$22,335	\$23,452	\$24,624	\$25,855
Project Specialist (Carbon Accounting, GIS)	\$30,000	\$31,500	\$33,075	\$34,729	\$36,465	\$38,288	\$40,203	\$42,213	\$44,324
Project Specialist (GIS)	\$22,500	\$23,625	\$24,806	\$26,047	\$27,349	\$28,716	\$30,152	\$31,660	\$33,243
Project Communications Specialist	\$15,525	\$16,301	\$17,116	\$19,969	\$20,967	\$22,016	\$23,117	\$24,272	\$25,486
Project Monitoring and Evaluation Specialist	\$13,500	\$14,175	\$14,884	\$17,364	\$18,233	\$19,144	\$20,101	\$21,107	\$22,162
Field Coordinator	\$31,250	\$32,813	\$34,453	\$36,176	\$37,985	\$39,884	\$41,878	\$43,972	\$46,170
Field Officer	\$28,125	\$29,531	\$31,008	\$130,233	\$136,744	\$143,582	\$150,761	\$158,299	\$166,214
Drivers	\$14,063	\$14,766	\$15,504	\$21,705	\$22,791	\$23,930	\$25,127	\$26,383	\$27,702
Field Logistics/Admin Support	\$22,500	\$23,625	\$24,806	\$34,729	\$36,465	\$38,288	\$40,203	\$42,213	\$44,324
Community Mobilizer	\$25,000	\$26,250	\$27,563	\$28,941	\$30,388	\$31,907	\$33,502	\$35,178	\$36,936

Administrative Costs & Travel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Administrative and Contract Officer	\$1,800	\$1,890	\$1,985	\$4,167	\$4,376	\$4,595	\$4,824	\$5,066	\$5,319
Procurement Officer	\$3,750	\$3,938	\$4,134	\$8,682	\$9,116	\$9,572	\$10,051	\$10,553	\$11,081
Logistics / Admin Officer	\$3,750	\$3,938	\$4,134	\$8,682	\$9,116	\$9,572	\$10,051	\$10,553	\$11,081
Financial Manager	\$3,450	\$3,623	\$3,804	\$7,988	\$8,387	\$8,806	\$9,247	\$9,709	\$10,194
Accounting Officer	\$5,400	\$5,670	\$5,954	\$12,502	\$13,127	\$13,784	\$14,473	\$15,197	\$15,957
HR Specialist	\$1,500	\$1,575	\$1,654	\$3,473	\$3,647	\$3,829	\$4,020	\$4,221	\$4,432
Other (Cleaners, Caretakers, Cooks)	\$5,000	\$5,250	\$5,513	\$11,576	\$12,155	\$12,763	\$13,401	\$14,071	\$14,775
Benefits All Staff	\$41,713	\$43,799	\$45,989	\$89,541	\$94,018	\$98,719	\$103,655	\$108,838	\$114,280
Recruitment & Staff Development	\$4,248	\$4,460	\$4,683	\$4,917	\$5,163	\$5,421	\$5,692	\$5,977	\$6,276
Travel & per diem (Staff above)	\$56,000	\$58,800	\$61,740	\$81,034	\$85,085	\$89,340	\$93,807	\$98,497	\$103,422
Communication and visibility - materials/ events/ Documentation	\$20,000	\$21,000	\$22,050	\$23,153	\$24,310	\$25,526	\$26,802	\$28,142	\$29,549
Main Office Set Up + Equipment	\$15,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Main Office Rent	\$18,000	\$18,900	\$19,845	\$20,837	\$21,879	\$22,973	\$24,122	\$25,328	\$26,594
Field Office Set Up	\$7,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Field Office Rent	\$4,500	\$4,725	\$4,961	\$10,419	\$10,940	\$11,487	\$12,061	\$12,664	\$13,297
Main Office supplies, utilities, and opex	\$0	\$0	\$0	\$28,999	\$30,448	\$31,971	\$33,569	\$35,248	\$37,010
Field Office supplies, utilities & opex	\$6,300	\$6,615	\$6,946	\$14,586	\$15,315	\$16,081	\$16,885	\$17,729	\$18,616
Internet/communication/ telephones	\$14,100	\$14,805	\$15,545	\$32,645	\$34,277	\$35,991	\$37,791	\$39,680	\$41,664
Field, clothing and safety equipment	\$1,200	\$0	\$0	\$0	\$0	\$1,532	\$0	\$0	\$0
Internal capacity building and training	\$5,000	\$5,250	\$5,513	\$5,788	\$6,078	\$6,381	\$6,700	\$7,036	\$7,387
Laptop and Accessories	\$23,000	\$0	\$0	\$0	\$27,957	\$0	\$0	\$0	\$33,981
Vehicles - Landcruisers	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Admin Vehicle Fuel	\$6,000	\$6,300	\$6,615	\$13,892	\$14,586	\$15,315	\$16,081	\$16,885	\$17,729
Admin vehicle maintenance and insurance and tracking	\$13,400	\$14,070	\$14,774	\$15,512	\$16,288	\$17,102	\$17,957	\$18,855	\$19,798
Governance strategy	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Governance Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Facilitators of governance trainings	\$2,592	\$2,722	\$2,858	\$4,001	\$4,201	\$4,411	\$4,631	\$4,863	\$5,106
Land Owners Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Support to private forest owners to get certificates of land ownership	\$0	\$134,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Clan leaders and elders meetings (Phase 1)	\$20,480	\$21,504	\$22,579	\$23,708	\$24,894	\$0	\$0	\$0	\$0
Clan leaders and elders meetings (Phase 2)	\$0	\$0	\$0	\$0	\$0	\$6,535	\$6,861	\$7,204	\$7,565
Community engagement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Engagement Support	\$0	\$0	\$123,701	\$0	\$0	\$0	\$0	\$0	\$0
Community Meetings (Phase 1)	\$85,272	\$89,536	\$94,012	\$98,713	\$103,649	\$0	\$0	\$0	\$0
Community Meetings (Phase 2)	\$0	\$0	\$0	\$0	\$0	\$27,208	\$28,568	\$29,997	\$0
Government engagement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Government meeting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Government trainings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Conservation Programs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forest Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training on Community Patrolling and Monitoring	\$45,000	\$0	\$0	\$0	\$72,930	\$0	\$0	\$0	\$0
Community Wildlife Scouts/Forest Patrolman Costs	\$0	\$0	\$0	\$2,778	\$2,917	\$3,063	\$3,216	\$3,377	\$3,546
Elite Unit - Community Wildlife Scouts/Forest Patrolman Costs	\$0	\$0	\$0	\$0	\$1,225	\$1,286	\$1,351	\$1,418	\$1,489
Boundary demarcation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boundary maintenance & fire management	\$24,300	\$25,515	\$26,791	\$28,130	\$29,537	\$31,014	\$32,564	\$34,193	\$35,902
Purchase of motorcycles	\$31,500	\$0	\$0	\$0	\$0	\$40,203	\$0	\$0	\$0
Protection motorcycle fuel	\$13,608	\$14,288	\$15,003	\$15,753	\$16,541	\$17,368	\$18,236	\$19,148	\$20,105
Motorbike maintenance and insurance	\$0	\$0	\$2,894	\$3,039	\$3,191	\$3,350	\$3,518	\$3,694	\$3,878
Monitoring and Patrols - Mobile Phones (Smart)	\$2,187	\$0	\$0	\$0	\$2,658	\$0	\$0	\$3,077	\$3,231
Monitoring and Patrols - Communications Costs	\$5,248	\$5,510	\$5,786	\$6,075	\$6,379	\$6,698	\$7,033	\$7,384	\$7,754

Development of fire management plan	\$0	\$24,150	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Support the Implementation of fire management plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Map forest in private land	\$12,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Social and Other Livelihood Programs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Treadle Pump	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Treadle pump purchase	\$0	\$40,520	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Inputs for Agroforestry Programs (e.g for Sustainable charcoal production)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Nurseries, equipment, seedlings - initial set up	\$184,507	\$0	\$0	\$0	\$0	\$0	\$247,257	\$0	\$0
Other Annual Agroforestry Opex	\$99,733	\$0	\$0	\$0	\$0	\$0	\$133,652	\$0	\$0
Sunflower crop income enhancement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sunflower - Initial Investment - equipment, mobilization, formation, etc.	\$0	\$0	\$0	\$360,793	\$0	\$0	\$0	\$0	\$0
Sunflower - Working Capital Financing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$157,877	\$0
Other Annual Sunflower Opex	\$0	\$0	\$0	\$168,370	\$0	\$0	\$0	\$204,655	\$0
Other agriculture (e.g., chia or other crops)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other ag - Initial Investment - equipment, mobilization, formation, etc.	\$0	\$52,080	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other ag - Working Capital Financing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Annual Agriculture Opex	\$0	\$102,533	\$0	\$0	\$0	\$0	\$145,400	\$0	\$0
Livestock income enhancement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training - Community	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Procurement of Veterinary Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Value addition on meat and dairy products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Bee keeping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Apiary - Initial Investement - beehives, mobilization, formation, etc.	\$0	\$141,750	\$148,838	\$156,279	\$164,093	\$0	\$0	\$0	\$0
Apiary - Working Capital Financing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Annual Apiary Opex	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Village credit and savings scheme	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
VSLA Set Up	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Start up capital	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Platform Fees	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tourism Concessions	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Opex (first 2 years)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL Program Budget	\$1,120,300	\$1,123,199	\$934,588	\$1,676,700	\$1,309,684	\$1,034,656	\$1,568,877	\$1,460,304	\$1,155,146

Budget Period #	2032	2033	2034	2035	2036	2037	2038	2039	
Budget Year	10 Yr	11 Yr	12 Yr	13 Yr	14 Yr	15 Yr	16 Yr	17 Yr	Total
Program Budget									
Program Management and Field Operational Support	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Director	\$15,513	\$16,289	\$17,103	\$17,959	\$18,856	\$19,799	\$20,789	\$21,829	\$258,404
Project Manager (operations)	\$9,308	\$9,773	\$10,262	\$10,775	\$11,314	\$11,880	\$12,474	\$13,097	\$155,042
Governance Advisor	\$3,878	\$4,072	\$4,276	\$4,490	\$4,714	\$4,950	\$5,197	\$5,457	\$64,601
Community Engagement Manager	\$19,392	\$20,361	\$21,379	\$22,448	\$23,571	\$24,749	\$25,987	\$27,286	\$293,450
Conservation Director	\$6,205	\$6,516	\$6,841	\$7,183	\$7,543	\$7,920	\$8,316	\$8,731	\$103,361
Enterprise Development Specialist	\$27,148	\$28,506	\$29,931	\$31,427	\$32,999	\$34,649	\$36,381	\$38,200	\$410,830
Project Specialist (Carbon Accounting, GIS)	\$46,540	\$48,867	\$51,310	\$53,876	\$56,569	\$59,398	\$62,368	\$65,486	\$775,211
Project Specialist (GIS)	\$34,905	\$36,650	\$38,483	\$40,407	\$42,427	\$44,548	\$46,776	\$49,115	\$581,408
Project Communications Specialist	\$26,760	\$28,098	\$29,503	\$30,979	\$32,527	\$34,154	\$35,862	\$37,655	\$440,308

Project Monitoring and Evaluation Specialist	\$23,270	\$24,433	\$25,655	\$26,938	\$28,285	\$29,699	\$31,184	\$32,743	\$382,877
Field Coordinator	\$48,479	\$50,903	\$53,448	\$56,121	\$58,927	\$61,873	\$64,967	\$68,215	\$807,511
Field Officer	\$174,524	\$183,251	\$192,413	\$202,034	\$212,136	\$222,742	\$233,879	\$245,573	\$2,641,049
Drivers	\$29,087	\$30,542	\$32,069	\$33,672	\$35,356	\$37,124	\$38,980	\$40,929	\$469,730
Field Logistics/Admin Support	\$46,540	\$48,867	\$51,310	\$53,876	\$56,569	\$59,398	\$62,368	\$65,486	\$751,567
Community Mobilizer	\$38,783	\$40,722	\$42,758	\$44,896	\$47,141	\$49,498	\$51,973	\$54,572	\$646,009
Administrative Costs & Travel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Administrative and Contract Officer	\$5,585	\$5,864	\$6,157	\$6,465	\$6,788	\$7,128	\$7,484	\$7,858	\$87,351
Procurement Officer	\$11,635	\$12,217	\$12,828	\$13,469	\$14,142	\$14,849	\$15,592	\$16,372	\$181,981
Logistics / Admin Officer	\$11,635	\$12,217	\$12,828	\$13,469	\$14,142	\$14,849	\$15,592	\$16,372	\$181,981
Financial Manager	\$10,704	\$11,239	\$11,801	\$12,391	\$13,011	\$13,662	\$14,345	\$15,062	\$167,422
Accounting Officer	\$16,754	\$17,592	\$18,472	\$19,395	\$20,365	\$21,383	\$22,452	\$23,575	\$262,052
HR Specialist	\$4,654	\$4,887	\$5,131	\$5,388	\$5,657	\$5,940	\$6,237	\$6,549	\$72,792
Other (Cleaners, Caretakers, Cooks)	\$15,513	\$16,289	\$17,103	\$17,959	\$18,856	\$19,799	\$20,789	\$21,829	\$242,641
Benefits All Staff	\$119,994	\$125,994	\$132,293	\$138,908	\$145,853	\$153,146	\$160,803	\$168,843	\$1,886,387
Recruitment & Staff Development	\$6,590	\$6,919	\$7,265	\$7,628	\$8,010	\$8,410	\$8,831	\$9,272	\$109,763
Travel & per diem (Staff above)	\$108,593	\$114,023	\$119,724	\$125,710	\$131,995	\$138,595	\$145,525	\$152,801	\$1,764,691
Communication and visibility - materials/ events/ Documentation	\$31,027	\$32,578	\$34,207	\$35,917	\$37,713	\$39,599	\$41,579	\$43,657	\$516,807
Main Office Set Up + Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000
Main Office Rent	\$27,924	\$29,320	\$30,786	\$32,325	\$33,942	\$35,639	\$37,421	\$39,292	\$465,127
Field Office Set Up	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,500
Field Office Rent	\$13,962	\$14,660	\$15,393	\$16,163	\$16,971	\$17,819	\$18,710	\$19,646	\$218,377
Main Office supplies, utilities, and opex	\$38,861	\$40,804	\$42,844	\$44,986	\$47,236	\$49,597	\$52,077	\$54,681	\$568,331
Field Office supplies, utilities & opex	\$19,547	\$20,524	\$21,550	\$22,628	\$23,759	\$24,947	\$26,194	\$27,504	\$305,728
Internet/communication/ telephones	\$43,747	\$45,935	\$48,232	\$50,643	\$53,175	\$55,834	\$58,626	\$61,557	\$684,248
Field, clothing and safety equipment	\$0	\$1,955	\$0	\$0	\$0	\$0	\$2,495	\$0	\$7,181
Internal capacity building and training	\$7,757	\$8,144	\$8,552	\$8,979	\$9,428	\$9,900	\$10,395	\$10,914	\$129,202

Laptop and Accessories	\$0	\$0	\$0	\$41,305	\$0	\$0	\$0	\$50,206	\$176,449
Vehicles - Landcruisers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000
Admin Vehicle Fuel	\$18,616	\$19,547	\$20,524	\$21,550	\$22,628	\$23,759	\$24,947	\$26,194	\$291,169
Admin vehicle mantainance and insurance and tracking	\$20,788	\$21,827	\$22,919	\$24,064	\$25,268	\$26,531	\$27,858	\$29,251	\$346,261
Governance strategy	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Governance Training	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Facilitators of governance trainings	\$5,361	\$5,629	\$5,911	\$6,206	\$6,517	\$6,843	\$7,185	\$7,544	\$86,581
Land Owners Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Support to private forest owners to get certificates of land ownership	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$134,400
Clan leaders and elders meetings (Phase 1)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$113,165
Clan leaders and elders meetings (Phase 2)	\$7,943	\$8,340	\$8,757	\$9,195	\$9,655	\$10,137	\$10,644	\$11,176	\$104,011
Community engagement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Engagement Support	\$0	\$0	\$0	\$0	\$0	\$222,148	\$0	\$0	\$345,849
Community Meetings (Phase 1)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$471,182
Community Meetings (Phase 2)	\$33,071	\$34,725	\$36,461	\$38,284	\$40,198	\$42,208	\$44,319	\$46,535	\$401,573
Government engagement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Government meeting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Government trainings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Conservation Programs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Forest Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training on Community Patrolling and Monitoring	\$93,080	\$0	\$0	\$0	\$0	\$118,796	\$0	\$0	\$329,806
Community Wildlife Scouts/Forest Patrolman Costs	\$3,723	\$3,909	\$4,105	\$4,310	\$4,526	\$4,752	\$4,989	\$5,239	\$54,451
Elite Unit - Community Wildlife Scouts/Forest Patrolman Costs	\$1,564	\$1,642	\$1,724	\$1,810	\$1,901	\$1,996	\$2,096	\$2,200	\$21,702
Boundary demarcation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boundary maintenance & fire management	\$37,697	\$39,582	\$41,561	\$43,639	\$45,821	\$48,112	\$50,518	\$53,044	\$627,921

Purchase of motorcycles	\$0	\$0	\$53,876	\$0	\$0	\$0	\$0	\$0	\$125,579
Protection motorcycle fuel	\$21,110	\$22,166	\$23,274	\$24,438	\$25,660	\$26,943	\$28,290	\$29,705	\$351,636
Motorbike mantainance and insurance	\$4,072	\$4,276	\$4,490	\$4,714	\$4,950	\$5,197	\$5,457	\$5,730	\$62,450
Monitoring and Patrols - Mobile Phones (Smart)	\$0	\$0	\$0	\$3,927	\$0	\$0	\$0	\$0	\$15,079
Monitoring and Patrols - Communications Costs	\$8,141	\$8,548	\$8,976	\$9,425	\$9,896	\$10,391	\$10,910	\$11,456	\$135,610
Development of fire management plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$24,150
Support the Implementation of fire management plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Map forest in private land	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$12,800
Social and Other Livelihood Programs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Treadle Pump	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Treadle pump purchase	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$40,520
Inputs for Agroforestry Programs (e.g for Sustainable charcoal production)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Nurseries, equipment, seedlings - initial set up	\$0	\$300,542	\$0	\$0	\$0	\$0	\$0	\$0	\$732,305
Other Annual Agroforestry Opex	\$0	\$162,455	\$0	\$0	\$0	\$0	\$0	\$0	\$395,841
Sunflower crop income enhancement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sunflower - Initial Investment - equipment, mobilization, formation, etc.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$360,793
Sunflower - Working Capital Financing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$157,877
Other Annual Sunflower Opex	\$0	\$0	\$248,759	\$0	\$0	\$0	\$0	\$0	\$621,784
Other agriculture (e.g., chia or other crops)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other ag - Initial Investment - equipment, mobilization, formation, etc.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$52,080

Other ag - Working Capital Financing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Annual Agriculture Opex	\$0	\$0	\$185,572	\$0	\$0	\$0	\$0	\$0	\$433,505
Livestock income enhancement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Training - Community	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Procurement of Veterinary Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Value addition on meat and dairy products	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bee keeping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Apiary - Initial Investment - beehives, mobilization, formation, etc.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$610,960
Apiary - Working Capital Financing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Annual Apiary Opex	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Village credit and savings scheme	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
VSLA Set Up	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Start up capital	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Platform Fees	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tourism Concessions	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Opex (first 2 years)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL Program Budget	\$1,299,982	\$1,732,199	\$1,818,816	\$1,442,372	\$1,466,997	\$1,881,291	\$1,619,859	\$1,748,438	\$24,393,408

13.2. VERR Development and Impact Monitoring Cost

The costs associated with producing verified emission reductions and removals under market standard include the following cost types:

- Field data collection (for the PD and MR1, and at each Verification)
 - Biomass (may be possible to leverage national forest inventory)
 - Soil
 - Household surveys
 - Participatory Rural Appraisals

- Biodiversity
- Remote sensing data (if not free or sourced from government)
- Technical carbon developer support
 - PD + Monitoring Report 1 (validation and verification of 1st monitoring report done concurrent)
 - On-going Monitoring Reports and verification
 - Non-Verification support years
 - Overall support under registries
- Dissemination of results to stakeholders
- International and local travel
- Independent auditor’s fees
- Registry fees for VCS and CCB (per ton)
- Management Entity Establishment and On-Going Support costs
- Legal fees to support climate finance transaction.

These costs are broken down for the each of the stages of delivery as follows based on annual verification and the first 9 years are shown in Table 28. Costs for remaining years are projected at year 9 plus inflation.

Table 28. Estimated VERRs Development Costs (Project Area)

Budget Year	1 Yr	2 Yr	3 Yr	4 Yr	5 Yr	6 Yr	7 Yr	8 Yr	9 Yr
by Cost Category									
Baseline and VCS+CCB Preparation Costs	\$270,373	\$63,941	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PD Validation Costs (and 1st MR done concurrent)	\$0	\$53,046	\$0	\$0	\$0	\$0	\$0	\$0	\$0
On-Going ER, Social and Biodiversity Monitoring and Verification Costs	\$12,000	\$33,731	\$23,087	\$34,509	\$361,147	\$35,329	\$366,485	\$36,196	\$372,148
ER Institutional Arrangements, Monetization and Transaction Related Costs	\$38,000	\$3,679	\$86,896	\$6,655	\$130,251	\$7,066	\$195,157	\$7,503	\$289,862
Total - 3. Climate, Social and Bio MRV	\$320,373	\$154,397	\$109,983	\$41,164	\$491,399	\$42,395	\$561,642	\$43,698	\$662,010

13.3. Net Cashflow (Climate Finance with Non-Reimbursable Funding)

The cash flow projection for the Project combines the VERRs projected, implementation budget and the VERRs development costs. The key assumption used on the cash projections are as follows:

Table 29. Key Assumptions for Cash Flow Projections

Assumption	Value
Budget Start Date	September 1, 2023
First Verification	Month 25 September 1, 2025 Note 1 st vintage year is 2021
VERR Price (t=1)	USD \$ 8.00 (assumes sold at market price, not through a climate finance transaction)
VERR Price Growth	4% annual
Verification Frequency	2 year
VERR% to Carbon Developer	10%
Upfront (Prepaid) Investment Amount	USD \$1,000,000
Prepaid Unit Price	USD \$4.00
Prepaid VERR Unit	250,000
Non-Reimbursable Funding Amount	USD \$4,000,000
Years of Non-Reimbursable Funding	3
% Market Price for POD	85%

Table 30. Projected Cashflow for Project (w/ Climate Finance and Non-Reimbursable Funding Years 1 – 9)

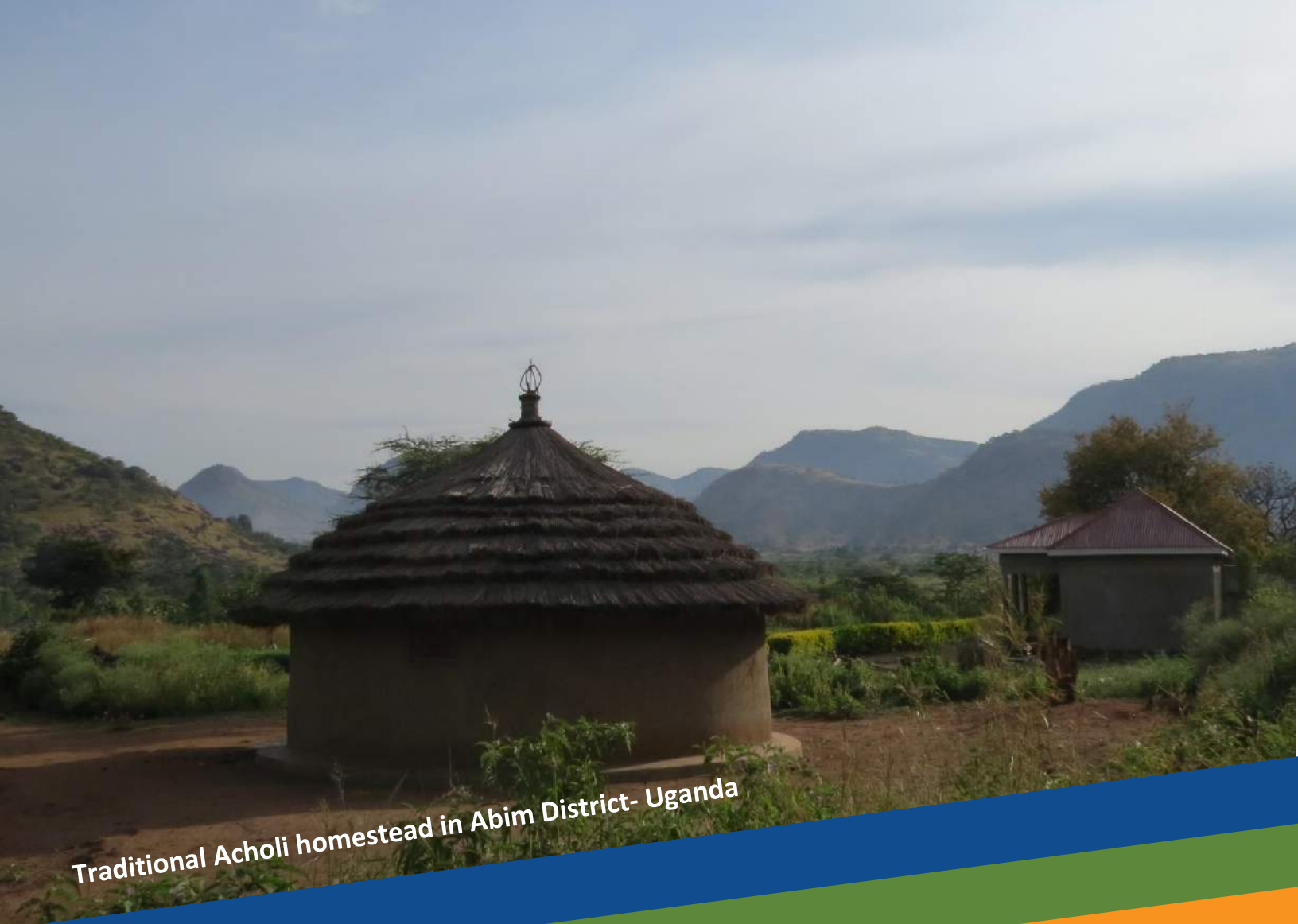
Budget Start Date	1-Sep-23	1-Sep-24	1-Sep-25	1-Sep-26	1-Sep-27	1-Sep-28	1-Sep-29	1-Sep-30	1-Sep-31
Budget Year	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr	8 yr	9 yr
Total from Program (VERRs)	-	-	280,585	-	405,394	-	581,343	-	822,218
Total to Fund Program	-	-	252,527	-	364,855	-	523,208	-	739,996
Payment on Delivery Price (paid by Investor)	\$6.80	\$7.08	\$7.37	\$7.67	\$7.98	\$8.30	\$8.64	\$8.99	\$9.36
Investee Cash Flow - ER Prepaid Structure (USD)									

Delivered to Investor to Settle Prepaid Purchase (tCO2e) = 1st Verification	-	-	50,000	-	-	-	-	-	-
Delivered to Investor to Settle Prepaid Purchase (tCO2e) = Later Verifications	-	-	-	-	116,754	-	83,246	-	-
Tons for Sale (tCO2e) - to Fund Project	-	-	202,527	-	248,101	-	439,962	-	739,996
Net Revenue for Project	\$0	\$0	\$1,491,686	\$0	\$1,979,290	\$0	\$3,801,731	\$0	\$6,925,985
ER Program Costs (with inflation)									
Total 2. Program Impl and Mgt	(\$1,120,300)	(\$1,123,199)	(\$934,588)	(\$1,676,700)	(\$1,309,684)	(\$1,034,656)	(\$1,568,877)	(\$1,460,304)	(\$1,155,146)
Total 3. Climate, Social and Bio MRV	(\$320,373)	(\$154,397)	(\$109,983)	(\$41,164)	(\$491,399)	(\$42,395)	(\$561,642)	(\$43,698)	(\$662,010)
Total ER Program Costs (Per Period)	(\$1,440,674)	(\$1,277,597)	(\$1,044,570)	(\$1,717,864)	(\$1,801,083)	(\$1,077,051)	(\$2,130,519)	(\$1,504,003)	(\$1,817,157)
Total ER Program Costs (Cumulative)	(\$1,440,674)	(\$2,718,270)	(\$3,762,841)	(\$5,480,705)	(\$7,281,788)	(\$8,358,839)	(\$10,489,358)	(\$11,993,360)	(\$13,810,517)
Other Funding (Non-Reimbursable)	\$1,333,333	\$1,333,333	\$1,333,333	\$0	\$0	\$0	\$0	\$0	\$0
Investees Net Cash Flow (per period) w/o financing	(\$107,340)	\$55,737	\$1,780,449	(\$1,717,864)	\$178,207	(\$1,077,051)	\$1,671,212	(\$1,504,003)	\$5,108,828
Investees Net Cash Flow (cumulative at end of period)	(\$107,340)	(\$51,603)	\$1,728,845	\$10,981	\$189,188	(\$887,863)	\$783,349	(\$720,654)	\$4,388,174
Financing from Investor (drawn down on milestones)	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Investee's ER Cash Flow w/o Financing (Per Period)	\$892,660	\$55,737	\$1,780,449	(\$1,717,864)	\$178,207	(\$1,077,051)	\$1,671,212	(\$1,504,003)	\$5,108,828
Total Investee's ER Cash Flow w/o Financing Cumulative (for BAP distributions)	\$892,660	\$948,397	\$2,728,845	\$1,010,981	\$1,189,188	\$112,137	\$1,783,349	\$279,346	\$5,388,174

Table 31. Projected Cash for Project (w/ Climate Finance and Non-Reimbursable Funding 10 – 17)

Budget Start Date	1-Sep-32	1-Sep-33	1-Sep-34	1-Sep-35	1-Sep-36	1-Sep-37	1-Sep-38	1-Sep-39	
Budget Year	10 yr	11 yr	12 yr	13 yr	14 yr	15 yr	16 yr	17 yr	Total
Total from Program (VERRs)	-	1,065,192	-	1,225,672	-	1,352,280	-	1,460,564	7,193,249
Total to Fund Program	-	958,673	-	1,103,105	-	1,217,052	-	1,314,508	6,473,924
Payment on Delivery Price (paid by Investor)	\$9.74	\$10.14	\$10.55	\$10.98	\$11.43	\$11.89	\$12.38	\$12.75	
Investee Cash Flow - ER Prepaid Structure (USD)									

Delivered to Investor to Settle Prepaid Purchase (tCO2e) = 1st Verification	-	-	-	-	-	-	-	-	50,000
Delivered to Investor to Settle Prepaid Purchase (tCO2e) = Later Verifications	-	-	-	-	-	-	-	-	200,000
Tons for Sale (tCO2e) - to Fund Project	-	958,673	-	1,103,105	-	1,217,052	-	1,314,508	6,223,924
Net Revenue for Project	\$0	\$9,718,705	\$0	\$12,112,684	\$0	\$14,474,997	\$0	\$16,933,950	\$67,439,028
ER Program Costs (with inflation)									
Total 2. Program Impl and Mgt	(\$1,299,982)	(\$1,732,199)	(\$1,818,816)	(\$1,442,372)	(\$1,466,997)	(\$1,881,291)	(\$1,619,859)	(\$1,748,438)	(\$24,393,408)
Total 3. Climate, Social and Bio MRV	(\$45,077)	(\$774,442)	(\$46,537)	(\$867,369)	(\$48,081)	(\$955,953)	(\$49,717)	(\$1,045,224)	(\$6,259,462)
Total ER Program Costs (Per Period)	(\$1,345,059)	(\$2,506,641)	(\$1,865,353)	(\$2,309,741)	(\$1,515,078)	(\$2,837,244)	(\$1,669,576)	(\$2,793,662)	(\$30,652,870)
Total ER Program Costs (Cumulative)	(\$15,155,576)	(\$17,662,217)	(\$19,527,570)	(\$21,837,311)	(\$23,352,389)	(\$26,189,633)	(\$27,859,208)	(\$30,652,870)	
Other Funding (Non-Reimbursable)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,000,000
Investees Net Cash Flow (per period) w/o financing	(\$1,345,059)	\$7,212,064	(\$1,865,353)	\$9,802,943	(\$1,515,078)	\$11,637,754	(\$1,669,576)	\$14,140,288	\$40,786,157
Investees Net Cash Flow (cumulative at end of period)	\$3,043,115	\$10,255,179	\$8,389,826	\$18,192,770	\$16,677,691	\$28,315,445	\$26,645,869	\$40,786,157	
Financing from Investor (drawn down on milestones)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Investee's ER Cash Flow w/o Financing (Per Period)	(\$1,345,059)	\$7,212,064	(\$1,865,353)	\$9,802,943	(\$1,515,078)	\$11,637,754	(\$1,669,576)	\$14,140,288	\$41,786,157
Total Investee's ER Cash Flow w/o Financing Cumulative (for BAP distributions)	\$4,043,115	\$11,255,179	\$9,389,826	\$19,192,770	\$17,677,691	\$29,315,445	\$27,645,869	\$41,786,157	



Traditional Acholi homestead in Abim District- Uganda

Section 14. Jurisdictional Program Carbon Projections



14. JURISDICTIONAL PROGRAM CARBON PROJECTIONS

The feasibility study conducted, in part, to determine whether private sector climate finance could be viable for the Project Area. Based on the estimated cash flow, the cumulative net income (after covering core implementation and VCU developing costs) is strong over the Project's first 17 years, totaling just under \$USD 45 million. But the Project fails to break even on a cumulative basis until Year 10 of Project Activities without an upfront investment or other source of capital. However, the Project covers its costs from carbon revenue on an annual basis starting in year 6. If the Project can blend donor/grant funding with a private sector upfront climate finance investment, it should be able to make the Project positive cash and long-term financially sustainable on sale of VCUs. An upfront climate finance investment would be paid back with discounted VCUs over the Project's first 1-4 verifications, and the investor would purchase forward VCUs from the Project (Section 13). And while there is the possibility for the Project Area alone to secure financing, most investors would be interested in supporting activities across the wide jurisdiction to reach scale. Thus, in addition to the Project level analysis that was the focus of this study, the carbon potential for a Jurisdictional REDD+ Program was also estimated.

Table 32 show the carbon estimates for the Jurisdictional Area that includes the area of both Upper Nile and Kyoga water management zones. The deforestation, degradation, reforestation, and enhancement rates in Table 18 were applied, resulting in a total cumulative VCUs of 94,691,656 over 30 years.

Table 32. Upper Nile and Kyoga Water management Areas Program Summary of Emission Reductions and Removals

Year	Year #	Estimated baseline emissions or removals (tCO2e)	Estimated project emissions or removals (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated net GHG emission reductions or removals (tCO2e)	Buffer	Annual VCU	Cum VCUs
		[tCO2e]	[tCO2e]	[tCO2e]	[tCO2e]	[tCO2e yr-1]	[t yr-1]	[t]
2021	1	3,717,255	3,628,929	391	87,935	8,793	79,141	79,141
2022	2	4,249,576	3,993,088	3,201	253,287	25,329	227,958	307,100
2023	3	4,781,012	4,168,774	17,999	594,239	59,424	534,815	841,915
2024	4	5,311,565	4,672,146	16,874	622,546	62,255	560,291	1,402,206
2025	5	5,841,237	4,697,569	53,777	1,089,890	108,989	980,901	2,383,107
2026	6	6,370,028	5,151,940	54,012	1,164,076	116,408	1,047,669	3,430,776
2027	7	6,897,940	5,356,854	81,230	1,459,857	145,986	1,313,871	4,744,647
2028	8	7,424,975	5,532,841	115,794	1,776,340	177,634	1,598,706	6,343,353
2029	9	7,951,134	5,679,977	158,319	2,112,838	211,284	1,901,554	8,244,907
2030	10	8,476,419	5,798,281	209,417	2,468,720	246,872	2,221,848	10,466,756
2031	11	8,462,331	5,392,858	263,759	2,805,714	280,571	2,525,143	12,991,899
2032	12	8,448,267	4,986,502	325,480	3,136,285	313,629	2,822,657	15,814,555
2033	13	8,434,226	4,760,336	358,108	3,315,783	331,578	2,984,205	18,798,760
2034	14	8,420,209	4,488,341	399,326	3,532,541	353,254	3,179,287	21,978,047
2035	15	8,406,215	4,272,532	437,313	3,696,370	369,637	3,326,733	25,304,780
2036	16	8,392,244	4,041,632	478,148	3,872,465	387,246	3,485,218	28,789,998
2037	17	8,378,297	3,832,957	517,829	4,027,510	402,751	3,624,759	32,414,758
2038	18	8,364,372	3,646,489	555,760	4,162,124	416,212	3,745,912	36,160,669
2039	19	8,350,471	3,482,158	591,370	4,276,943	427,694	3,849,249	40,009,918
2040	20	8,336,593	3,339,945	624,063	4,372,585	437,258	3,935,326	43,945,245
2041	21	8,322,738	3,215,358	654,125	4,453,255	445,325	4,007,929	47,953,174
2042	22	8,308,906	3,195,945	656,972	4,455,989	445,599	4,010,390	51,963,563
2043	23	8,295,097	3,096,302	681,653	4,517,142	451,714	4,065,428	56,028,991
2044	24	8,281,311	2,996,822	706,871	4,577,618	457,762	4,119,856	60,148,848
2045	25	8,267,548	2,943,962	718,845	4,604,740	460,474	4,144,266	64,293,114
2046	26	8,253,807	2,897,921	729,093	4,626,794	462,679	4,164,115	68,457,229
2047	27	8,240,090	2,858,685	737,575	4,643,830	464,383	4,179,447	72,636,676
2048	28	8,226,395	2,826,242	744,258	4,655,895	465,590	4,190,306	76,826,982
2049	29	8,212,723	2,800,583	749,102	4,663,038	466,304	4,196,734	81,023,716
2050	30	8,199,074	2,781,696	752,073	4,665,305	466,530	4,198,774	85,222,490
Total		227,622,056	120,537,663	12,392,737	94,691,656	9,469,166	85,222,490	94,691,656
tCO2/ha		316	167	17	132	13	118	132
tCO2/ha/yr		10.5	5.6	0.6	4.4	0.4	3.9	4.4



Fire in Karamoja Region – Uganda



Section 15. Project Risks



15.PROJECT RISKS

The project risk was conducted following the VCS Standard Non-Permanence Risk calculation tool (Table 33). The result of this assessment is a 10% risk buffer which deducted in the carbon estimates in Section 0

Table 33. Overall Risk Rating

Risk Category	Rating
Internal Risk	7
External Risk	2
Natural Risk	1
Overall Risk Rating (a + b + c)	10

15.1. Internal Risks

15.1.1. Project Management

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located.	0
b)	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued.	2
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (ie, any area of required experience is not covered by at least one individual with at least 5 years' experience in the area).	0
d)	Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area.	0
e)	Mitigation: Management team includes individuals with significant experience Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (e.g., individuals who have successfully managed	-2

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
	projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.	
f)	Mitigation: Adaptive management plan in place	-2
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)]		-2
Total may be less than zero.		

Rating Documentation

a) There have been no credits previously issued for this project. The ensuing answers assume conditions at the start of project activities, which do not include tree planting as part of the carbon stocks.

b) 54% of the forest area is located inside protected areas, which are vulnerable to encroachment. Therefore, it is conservatively assumed that ongoing enforcement will be needed to protect more than 50% of carbon stocks.

c) The management of the Project is being carried out by Research Triangle Institute (RTI), Uganda Wildlife Authority (UWA), National Forest Authority (NFA), Uganda Biodiversity Fund and Terra Global Capital, LLC. These entities have extensive experience in all skills necessary to undertake Project activities. The below tables contain a summary of the key individuals from RTI and Terra Global responsible for the Project.

d) The management team has a presence in Uganda, and the project proponent has a permanent presence in the project area, with several offices inside the Project Area.

e) The management team has significant experience. See tables below.

f) RTI and the National Forestry Authority of Uganda (NFA) have put an adaptive management plan in place.

Research Triangle Institute	
Juraj Ujhazy Private Sector Engagement / Conservation	Mr. Ujhazy is a private sector development/biodiversity conservation professional with work experience on three continents (since 2005 primarily in Africa). He is experienced in both managing projects in the field (including protected area

Research Triangle Institute	
Enterprise Development	<p>management) and providing advisory services. He has prior advanced experience in private equity and investment banking.</p> <p>Mr. Ujhazy’s conservation specialties include protected area management/planning, conservation finance, small and medium size enterprise development, community development, impact investing, and biodiversity in Africa. His finance specialties include financial analysis and modelling, valuation, equity and debt financing, due diligence and project finance.</p>

Terra Global Capital, LLC	
<p>Leslie L. Durschinger - Founder, CEO</p> <p>Conservation Finance, Sustainable Landscape Program Development</p>	<p>Leveraging 20 years of experience and a proven track record in the financial services industry, Ms. Durschinger founded Terra Global Capital in 2006 to promote results-based approaches to sustainable landscape management through climate smart agricultural and reducing deforestation. Ms Durschinger is recognized as a pioneer and innovator in alignment of development values and financially viable approaches to sustainable landscape management. Terra is now the leader in forest and agriculture program development, GHG analytics and business model development, providing technical expertise their global client base of governments, NGOs, and private companies in a collaborative and participatory manner. Under Durschinger’s leadership Terra has structured risk mitigation instruments, trust funds and private equity funds to drive investment capital to sustainable agricultural production and forest management. Prior to Terra, Ms. Durschinger held senior management positions in the areas of derivatives trading, investment management, algorithmic trading, risk management, and securities lending. She the co-Chair of the International Emission Trading Associations Natural Capital Solutions working group and is a member of the Verified Carbon Standard (VCS) AFOLU Steering Committee, REDD+ Social & Environmental Standards Committee, VCS JNR Permanence Work Group, Coalition on Agricultural Greenhouse (C-AGG) Advisory Committee and W+ Standard Advisory Council. Ms. Durschinger and her family make small production olive oil on their farm in Mendocino County.</p>

Terra Global Capital, LLC	
	Among her previous employers are JP Morgan, Merrill Lynch, Barclays Global Investors and Charles Schwab.
<p>Erica Meta Smith, M.F., RPF – Managing Director</p> <p>Forestry, Field Training, GHG Quantification</p>	<p>Ms. Smith, M.F., RPF. Forest Carbon Field Development Specialist, Joined Terra Global Capital in 2009. Ms. Smith provides technical forestry knowledge, on-ground carbon quantification expertise, and specializes in forest mensuration programs. She has firsthand knowledge of a forestry-based income the experience of depending on natural resources as a livelihood. Before working with Terra Global Capital Ms. Smith worked in forest policy and on forestry technical operations. She received her undergraduate degree in forestry and Master of Forestry from University of California-Berkeley in 2005 and 2007. Her master’s work reviewed California Climate Action Registry’s Forestry Protocols and implications of carbon markets in California. Ms. Smith is a Certified Ecologist through the Ecological Society of America and a Registered Professional Forester in the State of California. Ms. Smith has worked extensively in the REDD+ sector training communities and working with in-country experts for excellence in MRV.</p>
<p>David Montoya González</p> <p>M.S., Director, Project Management, Lead Remote Sensing Analysis and GIS</p>	<p>Mr. Montoya has a widely experience in remote sensing and GIS. He holds a bachelor’s degree in Forest Engineer from the National University of Colombia (UNAL) and a master’s degree in remote sensing from Federal University of Rio Grande do Sul (UFRGS) – Brazil. Mr. Montoya has worked with multiple Colombian government entities, such as the national department of statistics (DANE), supporting the 3rd National Agricultural Census, the National University of Colombia in research projects in the Andean Region, and with indigenous communities analyzing the land cover changes and natural resources sustainability. In addition, Mr. Montoya has also professional experience closely related with Nature Based Solutions by managing REDD+ projects and developing GHG and LULC assessments in Colombia, Belize, Malawi, Myanmar, among other countries, under the international standard VSC and CCB</p>
Carolina Oleas	Mrs. Oleas provides technical agricultural knowledge, community development expertise, and specializes in participatory project management. She has first-hand field experience working with

Terra Global Capital, LLC	
<p>M.S., Director, Agronomy, Project Management, Rural Development</p>	<p>farmers in different countries of Latin America (Guatemala, Ecuador, Costa Rica, Bolivia, Haiti, El Salvador, others) building capacity with rural communities in sustainable development and climate-smart agricultural practices. Before joining Terra, Mrs. Oleas worked on designing, managing, monitoring, and evaluating projects and programs to promote sustainable production and the application of agricultural adaptation and mitigation practices at the field level with farmers’ organizations. She received her undergraduate degree in agricultural engineering from EARTH University in Costa Rica, and later received a Master’s in International Agricultural Development from Texas A&M University.</p>
<p>Holver Arango Principal, GHG Quantification</p>	<p>Holver Arango has more than 10 years’ experience as a forestry engineer and is skilled in project formulation and management. At Terra Global, Holver is focused on GHG quantification for conservation and sustainable forest management projects. He has experience working with rural communities and environmental and agrarian institutions. Holver also has experience in multiple Colombian government entities (research institutes, environmental institutes, municipalities), international cooperation projects, and private companies in Colombia. He is knowledgeable in forest community management, land use planning, environmental and agrarian law, and official institutions. His work has focused on projects that aim to improve rural people's life, especially those that focus on human rights and sustainability as the anchor of forest conservation and restoration initiatives. Holver has a Bachelor of Science in Engineering from the National University of Colombia</p>
<p>Esther Kemigisha Local contractor</p>	<p>Esther Kemigisha combines both research and technical experience, narrowing the gap between research and practice. She has over 10 years of research experience, focusing on forestry and rural livelihood sustainability in the agrarian setting. She holds a Master of Science in Forestry and a Bachelor of Science from Makerere university. She has conducted research into the causes of tropical deforestation and its interaction with poverty, and government policies. Her recent work has investigated environmental reliance and potentially unsustainable resource use, and how conservation policy interventions should be differentiated to address the different needs and opportunities of households. Esther has over 5</p>

Terra Global Capital, LLC	
	<p>years of technical experience in implementing government rural development programs in Uganda: She worked with the Ministry of Water and Environment under the Farm Income Enhancement and Forest Conservation Project (FIEFOC) project, first as a technical service provider in</p> <p>the FIEFOC phase I, and later as a consultant for the baseline survey for FIEFOC phase II. Prior to working with the Ministry of Water and Environment, Esther supervised (re) afforestation and forest restoration programs under the National Forestry Authority in Uganda, including participating in the designing and implementing of management plans for central forest reserves</p>

15.1.2. Financial Viability

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
Q	How many years does it take for the cumulative cashflow to break even?	a)
Q	What percentage of funding is needed to cover the total cash out before the project breaks even has been secured?	f)
a)	Project cash flow breakeven point is greater than 10 years from the current risk assessment	3
f)	Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven	2
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] Total may not be less than zero.		5

Rating Documentation

a) Project cashflow breakeven point is greater than 10 years from the current risk assessment. This is demonstrated in the cashflow analysis in Section 13.3.

f) It is assumed that RTI, through its USAID funding, has secured between 15% and 40% of funding needed to cover the total cash out required before the project reaches breakeven.

15.1.3. Opportunity Cost

Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
Q	What is the NPV from the most profitable alternative land use activity compared to NPV of project activity?	a)
a)	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated	8
g)	Mitigation: Project proponent is a non-profit organization	-2
h)	Mitigation: Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over the length of the project crediting period (see project longevity)	-2
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)]		4
Total may be less than 0.		

Rating Documentation

a) The most profitable alternative land use activities include sugarcane production and bee keeping. The NPV of sugarcane production is estimated to be USD \$8,727,968 over a five-year period in the Jinja District of Uganda (Nsubuga, 2013). The NPV of bee keeping according to a study in Tanzania is about Tzs 270,000, or USD \$117 (Lunyamadzo, 2016). Assuming a 20% discount rate and no other sources of funding besides the sale of VERRs, the NPV of the project activities is USD (\$1,371,684). Because the NPV from the most profitable alternative land use activities was positive, and the NPV of the project activities is negative, option a) was selected.

g) One of the project proponents, the Uganda Biodiversity Fund, is a non-profit organization.

h) This mitigation was taken, as the developer recommends a legally binding commitment to protect carbon stocks over the length of the crediting period.

15.1.4. Project Longevity

Project Longevity		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
Q	Does the project have a legally binding agreement that covers at least a 100-year period from the project start date?	No

Q	What is the project Longevity in years?	60
Q	Legal Agreement or requirement to continue management practice?	Yes
a)	With legal agreement or requirement to continue the management practice	0
Total Project Longevity (PL) May not be less than zero		0

Rating Documentation

Q) Based on discussions with private landowners, a 100-year agreement is not suitable for them.

a) There has not yet been an agreement about the continuation of management practices, but the developer recommends signing agreements with all stakeholders to continue management practices beyond the length of the crediting period.

Internal Risk	
Total Internal Risk (PM + FV + OC + PL) Total may not be less than zero.	7

15.2. External Risks

15.2.1. Land Tenure and Resource Access/Impacts

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
Q	Are the ownership and resource access/use rights held by the same of different entities?	Different
b)	Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned, and the project proponent holds a lease or concession)	2
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership	0
d)	There exist disputes over access/use rights (or overlapping rights)	5

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
e)	WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts	0
f)	Mitigation: Project area is protected by legally binding commitment (eg, a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period	0
g)	Mitigation: Where disputes over land tenure, ownership or access/use rights exist, documented evidence is if projects have implemented activities to resolve the disputes or clarify overlapping claims	-2
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] Total may not be less than zero.		5

Rating Documentation

b) In much of the project area, the land is government-owned with community-based use rights.

c) Based on field visits and discussions with different stakeholders, there are no disputes over land ownership in the Project Area.

d) There are differences in opinion about the Community Wildlife Management Area. UWA has the idea of gazettement it to hold all use rights and communities and other stakeholders think that it should remain community managed.

e) Not applicable.

f) This mitigation was not taken.

g) Several institutions are working in the Project Area to reduce conflict about resource use rights.

15.2.2. Community Engagement

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	0

b)	Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted	0
c)	Mitigation: The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area	-5
Total Community Engagement (CE) [where applicable, (a + b + c)] Total may be less than zero.		-5

Rating Documentation

a) and b) During the feasibility phase, 5 out of the 7 districts of the project area were visited, and there was engagement with community-based NGOs in and around the Project Area. There was overwhelming support for the idea of the project. It is assumed that 50% of households living within the Project Area and 20% of households living within 20km of the Project Area will be consulted by the start of project activities.

c) This mitigation was taken, as significant net-positive impacts on the lives of community members are expected from the livelihood programs, which are part of the project activities.

15.2.3. Political Risk

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
Q	What is the country's calculated Governance score?	-0.63
b)	Governance score of -0.79 to less than -0.32	4
f)	<p>Mitigation: Country implementing REDD+ Readiness or other activities such as:</p> <p>a) The country is receiving REDD+ Readiness funding from the World Bank Forest Carbon Partnership Facility, UN-REDD or other bilateral or multilateral donors, and is implementing a REDD+ policy framework covering key components such as GHG credit ownership, clear government authority over REDD+ projects and/or national measurement, reporting and verification systems.</p> <p>b) The country is participating in the CCBA/CARE REDD+ Social and Environmental Standards initiative.²</p> <p>c) The jurisdiction in which the project is located is participating in the Governors’ Climate and Forest Taskforce (GCF).</p> <p>d) The country has an established national FSC or PEFC standards body.</p>	-2

e) The country has an established Designated National Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project.	
Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.	2

Rating Documentation

b) Based on the most recent World Bank Worldwide Governance Indicators, Uganda has average score of -0.63 (detailed in the table below), resulting in a risk score of 4.

Data from:	http://info.worldbank.org/governance/wgi/Home/Reports				
Years:	2017-2021				
<i>A governance score (of between -2.5 and 2.5) shall be calculated from the mean of Governance Scores across the six indicators of the World Bank Institute’s Worldwide Governance Indicators (WGI), averaged over the most recent five years of available data. Governance scores shall be translated into risk scores.</i>					
Country:	Uganda				
Five Year Average Six Indicators:	-0.63				
	2017	2018	2019	2020	2021
Voice	-0.59	-0.69	-0.64	-0.71	-0.82
Political	-0.57	-0.70	-0.69	-0.81	-0.86
Effectiveness	-0.61	-0.66	-0.62	-0.59	-0.57
Regulatory	-0.25	-0.27	-0.40	-0.47	-0.48
Rule	-0.30	-0.31	-0.33	-0.34	-0.35
Corruption	-1.05	-1.03	-1.14	-1.03	-1.00

f) This mitigation was taken. Uganda is receiving REDD+ Readiness funding from the Forest Carbon Partnership Facility and completed their readiness Package in 2018. Uganda also has an established Designated National Authority under the CDM in their Ministry of Water and the Environment.

External Risk	
Total External Risk (LT + CE + PC)	0
Total may not be less than zero.	

15.3. Natural Risks

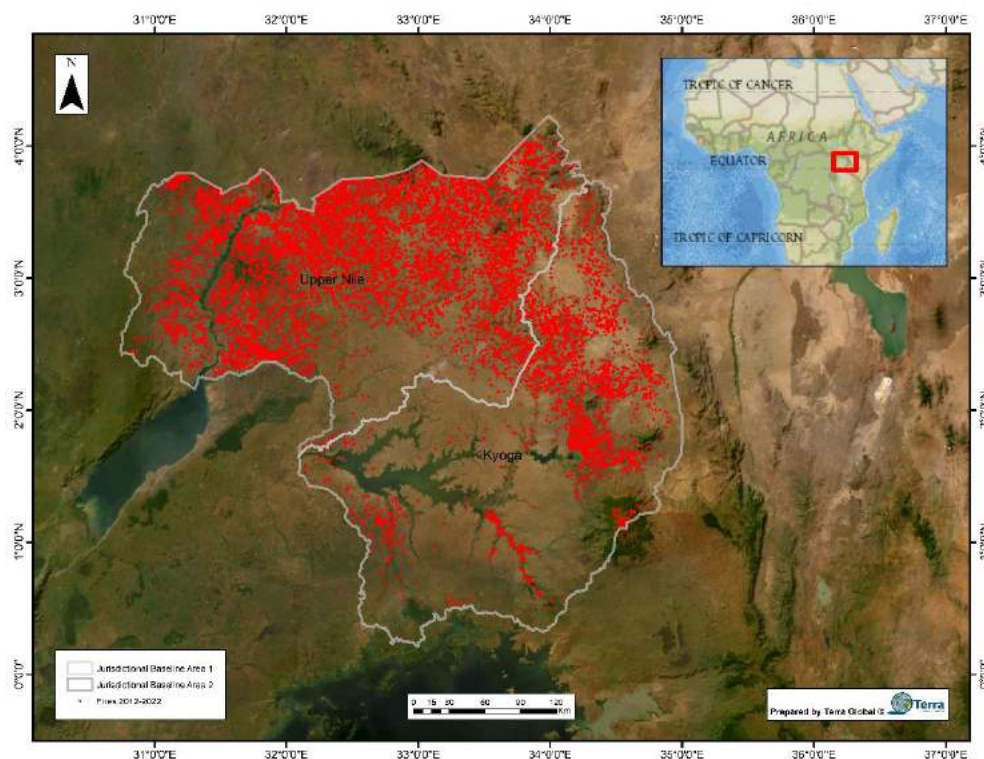
This portion of the template has been re-organized by type of natural risk to facilitate a more efficient review. For each type of natural risk, the section includes the explanation of significance, likelihood, and mitigation measures.

15.3.1. Fire

Significance

In the Jurisdictional Baseline Area (Upper Nile and Kyoga water management zones) there has been a total of 13,000 fires between 2012 and 2022 which means approximately 1,300 fires per year

Bush burning in the northern Uganda is used as land management practice to clear land for cultivation. Bush burning is also used to clear grazing lands to control ticks and allow new grass to sprout from the burnt scars. Poachers are also responsible for forest fires; they use fire to dry poached bush meat. During field visit experts stated that this fires rarely cause any deforestation, if done in the right period where is still some rainfall the fires would extinguish without any harm to forest areas, based on this information this risk was scored as “insignificant” (less than 5% loss in carbon stock).



Map 6. Example of Legal Entities and Agreements

Likelihood

In Uganda the peak fire season typically begins in late November and lasts around 15 weeks. This happens every year during the dry season thus livelihood is less than 10 years.

Score

Significance	Parameter
Significance	Insignificant
Likelihood	Less than every 10 years
Score (LS)	2
Mitigation	0.5
Combined Score	1

Mitigation

NFA and UWA has been implementing fire management plans. These implementing partners have proven history of effectively containing this risk.

15.3.2. Pest and Disease

Significance

Based on discussion with different stakeholders in the Project Area this risk is “insignificant” for the Project Area.

Likelihood

Risk from pest and disease is considered unlikely, the likelihood is considered zero.

15.3.3. Score

Significance	Parameter
Significance	Insignificant
Likelihood	0
Score (LS)	0
Mitigation	1
Combined Score	0

Mitigation

No mitigation activities implemented.

15.3.4. Extreme Weather

Significance

Prolonged periods of drought and erratic rainfalls have become more frequent in Uganda. However, little was found about forest loss due to extreme weather. Based on discussion with stakeholders in the Project Area, this risk was scored as “insignificant”.

Likelihood

Forest loss due to extreme weather is unlikely in the Project Area thus this risk was scored as zero.

Score

Significance	Parameter
Significance	Insignificant
Likelihood	Less than every 10 years
Score (LS)	0
Mitigation	1
Combined Score	0

Mitigation

No mitigation activities implemented.

15.3.5. Geological Risk

Significance

The Project Area is situated in the region subject to minimal risk of loss due to earthquakes or volcanos. The risk of loss of trees from earthquakes is low given the low anticipated strength of potential earthquakes.

Likelihood

Landslides are not considered a risk due to the flat nature of the terrain on the Project Area Forest. Given the location of the Project Area, geological events with carbon loss consequences are not likely to happen.

Score

Significance	No loss
Likelihood	0
Score (LS)	0
Mitigation	0
Combined Score	0

Mitigation

Not applicable.

15.3.6. Other Natural Risks

There are no other risks that is present in the Project Area that may impact the accumulated carbon stocks.

15.3.7. Total Natural Risk

Risk Category Factors				Risk Score
a)	Fire (F)	2	0.50	1.00
b)	Pest and Disease Outbreaks (PD)	0		0.00
c)	Extreme Weather (W)	0		0.00
d)	Geological Risk (G)	0		0.00
e)	Other natural risk (ON1)	0		0.00
f)	Other natural risk (ON2)	0		0.00
g)	Other natural risk (ON3)	0		0.00
Total Natural Risk [F + PD + W + G + ON]				1.00

15.4. Total Risk Buffer

Risk Category	Rating
Internal Risk	7
External Risk	2
Natural Risk	1
Overall Risk Rating (a + b + c)	10

The overall Project Risk is Low, 10 is the lowest value acceptable by the VCS Standard. This result makes for a feasible project.



Karenga District- Uganda

Section 16. Annexes



16.ANNEXES

Annex 1. Summary of stakeholder engagement

Annex 2. Project Workplan



Karenga District - Uganda

Section 17. References



17. REFERENCES

- ACHPR & IWGIA. (2009). *Report of the African commission's working group on Indigenous populations/communities: Research and information visit to the Republic of Uganda*. African Commission on Human and Peoples' Rights (ACHPR) & International Work Group for Indigenous Affairs (IWGIA).
- Aleper and Moe. (2006, June). The African savannah elephant population in Kidepo Valley National Park, Uganda: changes in size and structure from 1967 to 2000. *African Journal of Ecology*, pp. 157-164.
- Asadullah et al. (2008). Evaluation of five satellite products for estimation of rainfall over Uganda. *Hydrological Sciences Journal*.
- Atkinson. (1989). The evolution of ethnicity among the Acholi of Uganda: the precolonial phase. *Ethnohistory*.
- Buchhorn. (2019). Copernicus Global Land Service: Land Cover 100m: Collection 3: epoch 2019 Globe (Version V3.0.1) [Data set].
- Butler. (2016, May 21). *The top 10 most biodiverse countries. What are the most biodiverse countries?* Retrieved from Mongabay: <https://news.mongabay.com/2016/05/>
- Doom. (1999). Kony's Message: A New Koine? The Lord's Resistance Army in Northern Uganda. *African Affairs* 98.
- Forest Carbon Partnership Facility (FCPF). (2020, April). *Carbon Fund Methodological Framework*. Retrieved from https://www.forestcarbonpartnership.org/system/files/documents/fcpf_carbon_fund_methodological_framework_revised_2020_final_posted.pdf
- Global Forest Watch. (2021). Deforestation in Uganda.
- Godfrey et al. (2010). Household Firewood Consumption and its Dynamics in Kalisizo Sub-County, Central Uganda. *Ethnobotanical Leaflets* (Vol. 14).
- Gombya-ssembajjwe et al. (2001). *Case study - property rights: access to land and forest resources in Uganda*.
- Government of Uganda. (2003). *The National Forestry and Tree Planting Act. Kampala, Uganda*.

- Gowing et al. (2004). Integrating indigenous and scientific knowledge on soils: recent experiences in Uganda and Tanzania and their relevance to participatory land use planning. *Uganda Journal of Agricultural Sciences*.
- Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A., Tyukavina, A., . . . Townshend, J. R. (2013). High-Resolution Global Maps of 21st-Century Forest Cover Change. *Science*, 342(6160), 850-853. Retrieved from <https://science.sciencemag.org/content/342/6160/850>
- Howard, P. (1991). *Nature Conservation in Uganda's Tropical*.
- Indeje et al. (2000). ENSO signals in East. *Int J Clim*.
- IUCN. (2014). *World Database on Protected Areas*.
- IUCN. (2016, Dec 08). *New bird species and giraffe under threat – IUCN Red List*. Retrieved from IUCN: <https://www.iucn.org/news/secretariat/201612/new-bird-species-and-giraffe-under-threat-%E2%80%93-iucn-red-list>
- IWGIA. (2017). *The Indigenous world*. International Work Group for Indigenous Affairs (IWGIA).
- Jagger & Kittner. (2017). *Deforestation and Biomass Fuel Dynamics in Uganda*.
- Joseph Obua et al. (2010). Status of forests in Uganda. *African Journal of Ecology*.
- Josephat, M. (2018). Deforestation in Uganda: population increase, forests loss and climate change. *Environmental Risk Assessment and Remediation*, 46-50.
- Kagolo, M. (2010). *Forestry in Uganda over the years and its future*.
- Kazoora et al. (2020). *A review of collaborative forest management in Uganda*.
- Komutunga and Musiitwa. (2001). Agricultural systems. *Agriculture in Uganda Vol I*.
- Lunyamadzo, M. G. (2016). Performance and contribution of beekeeping enterprises to livelihood in Songea district. *Sokoine National Agricultural Library*.
- MFPED. (2020). *Third National Development Plan (NDP III) 2020/21 – 2024/25*.
- Ministry of Lands, Housing and Urban Development. (2013). *The Uganda national land policy*.
- Ministry of Tourism, Wildlife and Antiquities (MTWA). (2012-2022). *Kidepo National Park*. UGANDA WILDLIFE AUTHORITY. Retrieved from https://ugandawildlife.org/wp-content/uploads/2022/01/Kidepo_Valley_-National_Park_GMP.pdf

- Ministry of Water and Environment. (2013). *The National Forest Plan 2011/2012-2021/2022*.
- Ministry of Water and Environment. (2015). *Guidelines for Registration and Management of Private Natural Forests in Uganda. Popular Version*. Retrieved from <http://ufwg.enaalert.org/wp-content/uploads/2018/04/Guidelines-for-registration-and-management-of-private-natural-forests-in-Uganda.pdf>
- Ministry of Water and Environment. (2015). *State of Uganda's Forestry*.
- Ministry of Water and Environment. (2018). *Proposed Forest Reference Emission Level for Uganda*.
- Ministry of Water and Environment. (2020). *Uganda's Technical Annex with REDD+ results from Reducing Emissions from Deforestation*.
- Ministry of Water and Environment. (2017). *Proposed Forest Reference Level for Uganda*.
- Mitchell. (2022). Indigenous Land Rights and Contentious Politics in Africa: The Case of Uganda. *Ethnopolitics*.
- MoWE. (2017). *Proposed Forest Reference Level for Uganda. Republic of Uganda Ministry of Water and Environment*.
- MWE. (2016). *State of Uganda's Forestry 2016 Forest Sector Support Department*.
- MWE. (2018). *Revised Forest Management Plan For Agoro-Agu Sector Central Forest Reserves For the period: 1st July 2018 -30th June 2028 Final Draft*.
- MWE. (2022). *Forest Management Plan for KAABONG CENTRAL FOREST RESERVES*.
- Mwima, P. (2002). *Uganda Ecosystem and protected area*.
- National Forestry Authority. (2009). *National Biomass Study*.
- NFA. (2017). *Land Cover Change in the Karamoja subregion of Uganda*.
- Nsubuga F. et al. (2015). Water Resources of Uganda: An Assessment and Review. *Journal of Water Resource and Protection*.
- Nsubuga, B. (2013). Optimum crop enterprise combination in sugarcane based farming systems. *Joint Proceedings of the 27th Soil Science Society of East Africa and the 6th African Soil Science Society Conference*, 143-159.
- Obua et al. (2010). Status of forests in Uganda. *African Journal of Ecology*.

- Oliver. (1992). *The Kidepo Valley National Park Management Plan 1992 - 97*. Uganda National Parks, Kampala.
- Olivier, R. C. D. (1992). *Aerial Surveys for Protected Area and Wildlife Management Planning. Field Document 11*. Rome: ACTION DP:FO UGA/86/010, FAO Rome.
- Omach. (2021). *International peacebuilding and local contestations of notions of human rights in Acholi in Northern Uganda*. Third World Quarterly.
- Plumptre, Ayebare, Behangana et al. (2019). Conservation of vertebrates and plants in Uganda: Identifying Key Biodiversity Areas and other sites of national importance. *Conservation Science and Practice*, 1:e7.
- Pomeroy, D., Tushabe, H., & Loh, J. (2017). *State of Uganda's biodiversity*. Kampala, Uganda: National Biodiversity Databank Report, Makerere.
- Pomeroy, D. and Tushabe, H. (2004). *The State of Uganda's Biodiversity 2004*. Makerere University Institute of Environment and Natural Resources/National Biodiversity Data Bank. With assistance from DANIDAENRECA.
- Powell. (2010). *Karamoja: A literature review*. Saferworld.
- Powell, J. (2010). *Karamoja: A literature review*. Saferworld.
- Radwanski. (1960). *The Soils and Land Use of Buganda*.
- Rugadya & Kamusiime. (2013). Tenure in mystery: The status of land under wildlife, forestry and mining concessions in Karamoja region, Uganda. *Nomadic Peoples*.
- Saint Louis University. (2023). *Researchers discover elephant extinction could have major impact on atmospheric carbon levels*.
- Sandbrook. (2010). Local economic impact of different forms of nature-based tourism. *Conservation Letters*.
- TREES Standard. (2022, April). *Nesting Under ART*. Retrieved from <https://www.artredd.org/wp-content/uploads/2021/12/Nesting-under-ART-final-July-2021.pdf>
- Uganda Bureau of Statistics (UBOS). (2022). *Uganda National Survey Report 2019/2020*.
- Uganda Government. (1967). Uganda Soils Map.
- Uganda Wildlife Authority (UWA). (2012). *Community Conservation Policy*.

- UN. (2018). *Forestry and Macroeconomic Accounts of Uganda: The Importance of Linking Ecosystem Services to Macroeconomics*.
- UNEP. (2014). *Protected Planet Report 2014. Tracking Progress Towards Global Targets for Protected Areas*.
- van Breugel et al. (2014). *Potential Natural Vegetation of Eastern Africa (Ethiopia, Kenya, Malawi, Rwanda, Tanzania, Uganda and Zambia)*.
- van der Maarel. (2005). *Vegetation ecology*. Oxford, UK.
- WCS. (2016). *Nationally threatened species for Uganda: National Red List for the following taxa: mammals, birds, reptiles, amphibians, butterflies, dragonflies and vascular plants*. Uganda: Report for Ministry of Environment and National Environment Management Authority.
- White. (1983). *The Vegetation of Africa: a descriptive memoir to accompany the UNESCO/AETFAT/UNSO vegetation map of Africa. Natural Resources Research*.
- Wildlifeday. (2022). *Wildlifeday*. Retrieved from Facts sheet: Cheetah: <https://wildlifeday.org/content/factsheets/cheetah>
- World Bank. (2021). *World Bank*. Retrieved from <https://data.worldbank.org/country/uganda>
- World Bank. (2022, Octubre). Retrieved from <https://www.worldbank.org/en/country/uganda/overview>
- WSC. (n.d.). *Kidepo*. Retrieved from WCS: <https://uganda.wcs.org/wild-places/kidepo.aspx>