

THE MAI NDOMBE REDD+ PROJECT FIFTH MONITORING REPORT



Project title	The Mai Ndombe REDD+ Project
Project ID	934
Crediting period	14 March 2011 to 13 March 2041
Monitoring period	01 January 2022 – 31 December 2022
(CCB) GHG accounting period	14 March 2011 to 13 March 2041; 30-year total period
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Version	3.4
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CCB Standards version	2.0
Project location	Democratic Republic of Congo, Mai Ndombe Province
Project proponent(s)	Wildlife Works Carbon LLC Phone: +1-415-332-8081

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Validation/verification body	Organization: Earthood Services Limited Contact Name: Archit Srivastava Email: archit.srivastava@earthood.in Phone: +91 8758145642
History of CCB Status	Validation: 06 December 2012 Verification (M1): 06 December 2012 Verification (M2): 24 October 2017 Verification (M3): 29 March 2022 Verification (M4): 28 April 2023
Gold Level criteria	Climate and Biodiversity Gold Level Criteria The Mai Ndombe REDD+ Project aims to generate exceptional Climate and Biodiversity benefits under the VCS and CCB standards. The MNRP conserves flora and fauna within the Project Area. Protecting these two former logging concessions maintains critical forested areas and ecosystem services, as well as rehabilitates habitat for endangered charismatic animals such as the Bonobo and Forest Elephant. Climate: By protecting the native forest, the Project also increases the resilience of the ecosystem to the effects of climate change. Section GL1.4 of the CCB PD exemplifies many additional Project Activities that help local communities and biodiversity to minimize and adapt to expected climate change impacts. Improved seed distribution and training on improved agricultural methods will lead to increased yields and adaptation to changes in rainfall, the timing of growing seasons, and changing temperatures. Educational activities to enhance literacy and diversify livelihoods enable communities to adapt to anticipated rises in the frequency and intensity of natural disasters caused by climate change and the ensuing potential for increases in food insecurity and disease. Biodiversity: The Mai Ndombe REDD+ Project, through forest protection, affords a habitat for the bonobo (<i>Pan paniscus</i>), Giant Ground Pangolin (<i>Smutsia gigantea</i>) and has facilitated the return of the forest elephant (<i>Loxodonta cyclotis</i>). All three of these species are classified as endangered on the IUCN Red List.
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Wildlife Works Carbon

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1 SUMMARY OF PROJECT BENEFITS

1.1 4.3Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Introduction of sustainable agriculture, fisheries and livestock.	Agricultural intensification/diversification and demonstration gardens	2.1.1 4.3.1	Improved agriculture, fishing and livestock management, agroforestry systems, animal enclosure and vaccination system.
2) Improvement of health and social services	Five schools constructed Mobile medical clinic established and restocked Emergency medical response system established Bridges repaired/bridge access improved VHF network established 21 water wells dug	2.1.1 4.3.1	Educational infrastructure development, access to potable water, medical system improvements, better nutrition, improved infrastructure and access to markets.
3) Prevention and treatment of disease outbreaks	Eleven doctors and 81 nurses were mobilized and paid by the company to participate in the response to the Mpox epidemic. As a result, 1211 people with Mpox were cured out of 1268 cases found.	4.3.1	11 doctors and 81 nurses deployed to treat Mpox 1211 people with Mpox were cured
4) Improved governance and building of local governance and administrative capacities.	Re-establishment and reinforcement of LCDs Participatory mapping planning.	2.2.1 4.3.1	Participatory mapping for improved land tenure, establishment and management of LCDs, local and provincial governance improvement.

5) Biodiversity conservation and monitoring	Biodiversity inventories	5.3.1	Biodiversity inventories, biodiversity education and awareness raising.
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1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	Not Applicable	Not Applicable	Not Applicable
	Net estimated emission reductions in the project area, measured against the without-project scenario	4,782,428	3.2	49,587,257
Forest ¹ cover	For REDD ² projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	248,956	2.1.8	248,956
	For ARR ³ projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	Not Applicable	Not Applicable	Not Applicable
Improved land management	Number of hectares of existing production forest land in which IFM ⁴ practices have occurred as a result of the project's activities, measured against the without-project scenario	Not Applicable	Not Applicable	Not Applicable
	Number of hectares of non-forest land in which improved land management has occurred as a result of the	Not Applicable	Not Applicable	Not Applicable

¹ Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO, or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

² Reduced emissions from deforestation and forest degradation (REDD) – Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

³ Afforestation, reforestation and revegetation (ARR) – Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

⁴ Improved forest management (IFM) – Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood, and fuelwood (*VCS Program Definitions*)

	project's activities, measured against the without-project scenario			
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	1,005	2.3.15 4.3.1	23,177
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities	752	2.3.15 4.3.1	1,477
Employment	Total number of people employed in of project activities, ⁵ expressed as number of full-time employees ⁶	2,323	2.3.16 4.3.1	2,704
	Number of women employed in project activities, expressed as number of full-time employees	904	2.3.16 4.3.1	936
Livelihoods	Total number of people with improved livelihoods ⁷ or income generated as a result of project activities	325	4.1.3 4.3.1	2,539
	Number of women with improved livelihoods or income generated as a result of project activities	211	4.1.3 4.3.1	910
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	15,707	4.3.1	31833

⁵ Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers, and community members that are paid to carry out project-related work.

⁶ Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region, or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102]; [17.28])

⁷ Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	8502	4.3.1	15638
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	7920	2.2.1 4.3.1	16169
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	3709	2.2.1 4.3.1	6668
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	13500	4.3.1	25567
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	9507	2.2.1 4.3.1	17917
Well-being	Total number of community members whose well-being ⁸ was improved as a result of project activities	15217	4.1.3 4.3.1	63579
	Number of women whose well-being was improved as a result of project activities	6617	4.1.3 4.3.1	23237

⁸ Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation, ⁹ measured against the without-project scenario	299645	2.1.1	299645
	Number of globally Critically Endangered or Endangered species ¹⁰ benefiting from reduced threats as a result of project activities, ¹¹ measured against the without-project scenario	3	5.1.1 5.1.4	3

2 PROJECT DETAILS

2.1 Summary Description of the Implementation Status of the Project

2.1.1 Summary Description of the Project (VCS, 2.1, 3.6; CCB V3, G1.2; CCB V2¹², G3.1)

The Mai Ndombe REDD+ Project (MNRP), located in the western Democratic Republic of Congo, is an ecologically rich and diverse area that was previously earmarked for commercial timber exploitation. The area is home to approximately 108,000 people, most of whom live on the shores of Lake Mai Ndombe and along the main road from Selenge to the north-western project boundary. The conservation concession contains over 3.5 million cubic metres of commercial hardwood, which is highly sought after by logging companies. The project addresses logging and other key drivers of deforestation, such as subsistence farming and firewood/charcoal use. The MNRP uses carbon offset revenues to achieve climate, community and biodiversity objectives as follows:

Climate: Reduce CO₂ emissions from the project area by stopping planned legal logging and reducing unplanned illegal logging, charcoal production and slash-and-burn agriculture.

Community: Improve community well-being through improved livelihoods, food security, access to and quality of health, education and drinking water. Strengthen local administrative and

⁹ Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.

¹⁰ Per IUCN's Red List of Threatened Species

¹¹ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

¹² The MNRP was validated using CCB V2, thus its requirements will be displayed using version 2 in addition to version 3.

governance capacity by supporting existing traditional and contemporary governance structures.

Biodiversity: Maintain intact forests, ecosystem integrity, rare and ecologically valuable species, and promote the recovery of habitats and native flora and fauna. Increase local and external knowledge of the area's biodiversity values.

During M5, the MNRP achieved a gross emission reduction of 5,707,477 tCO₂e and a net emission reduction of 4,782,428 tCO₂e. Fifty-four forest biomass plots were measured in the PAA. Disturbance monitoring was carried out as required by the VCS monitoring plan using a temporal remote sensing evaluation of deforestation in the PAA, and project emissions were deducted from the overall NERs.

The project continued existing community programs and implemented new ones, including school construction and renovation (dates in Table 4-1), community engagement through Local Development Committees (CLDs), health improvement (vaccines and treatments Nov- Dec 2022), agroforestry, demonstration gardens and fishponds, and digging of boreholes to improve access to clean water. A VHF radio network was installed, and new supply boats were delivered to Inongo for the project (Dec 2022). Please refer to section 4.3 for a more detailed description of the project activities implemented.

Habitat and biodiversity surveys and forest monitoring continued throughout the project area. Faunal biodiversity was monitored using line transects and camera trap techniques, with a focus on estimating large mammal densities. High Conservation Value (HCV) species observed included the critically endangered forest elephant (*Loxodonta cyclotis*)¹³, the endangered bonobo (*Pan paniscus*)¹⁴, the giant ground pangolin (*Smutsia gigantea*) and the black-bellied pangolin (*Phataginus tetradactyla*)¹⁴. Market surveys in major ports and Inongo's main market investigated poaching and trade in endangered animals. Please refer to Section 5.3.1 for more information on biodiversity activities and benefits.

¹³ Bokamba, M.B., Bola, A.B., Bongo, G.N., Mpiana, P.T. & Ngbolua KT. (2015). Biomonitoring And Zonal Cartography Of *Loxodonta Africana Cyclotys* (Proboscidea, Mammalia) Activity In The Era-Congo/Mai-Ndomde Redd+ Concession In Democratic Republic Of The Congo. J. of Advanced Botany and Zoology, V3I3. DOI: 10.15297/JABZ.V3I3.02.

¹⁴ Jocque M., Booto J., Ekani J., Erens J., Jamie G., Jones S., Mbende M., Mertens J., Martin T, van Berkel T. & Weber N. 2021. The Malebo expedition: a biological assessment of a forest metacommunity in a savannah matrix landscape, DRC. BES Report 10.0 (1 December 2021). Biodiversity Inventory for Conservation. Glabbeek, Belgium, pp. 85.

2.1.2 Audit History (VCS, 4.1)

Audit Type	Period	Program	VVB Name	Number of years
Validation	14-March-2011 – 31-October-2012	VCS	Det Norske Veritas	1.63 years
Verification	14 March 2011 – 31 October 2012	CCB	Det Norske Veritas	1.63 years
Verification	01-November-2012 – 31-December-2016	VCS/CCB	EPIC Sustainability Services	4.17 years
Verification	01-January-2017 – 31-December-2020	VCS/CCB	SCS Global Services	Four years
Verification	01-January-2021 – 31-December-2021	VCS/CCB	Earthood Services Limited	One year
Verification	01-January-2022 – 31-December-2022	VCS/CCB	Earthood Services Limited	One year

2.1.3 Sectoral Scope and Project Type (VCS, 3.2)

Sectoral Scope	14: Agriculture, forestry, and other land use
AFOLU Project Category	Reduced Emissions from Deforestation and Degradation (REDD)
Project Activity Type	Avoiding Planned Deforestation (APD)

2.1.4 Project Proponent (VCS, 3.7; CCB V3, G1.1; CCB V2, G4.1)

Organization name	Wildlife Works Carbon LLC
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2.1.5 Other Entities Involved in the Project

Organization name	ERA Congo, a subsidiary of Wildlife Works Carbon LLC
Role in the project	Project implementation, operation, and management
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2.1.6 Project Start Date (VCS, 3.8)

MRR.2 The Project Start Date

Project start date	14-March-2011
Justification	This is the date that the Carbon Rights Agreement was signed between ERA Congo and the Government of the DRC, and REDD+ monitoring activities began according to the VCS methodology VM0009.

2.1.7 Benefits Assessment and Project Crediting Period (VCS, 3.9; CCB V3, G1.9)

MRR.3 The project crediting period start date, end date and length.

Crediting Period	The project lifetime will be 30 years commencing from the Project start date of 14-March-2011 with an end date of 13-March-2041. The GHG accounting period will be the same 30 years as the lifetime of the project.
Start Date of First or Fixed Crediting Period	14-March-2011
Total Number of Years of Crediting Period	30 years
CCB Benefits Assessment Period	14 March 2011 – 13 March 2041

2.1.8 Project Location (VCS, 3.11; CCB V3, G1.3; CCB V2, G1.1 & G1.2)

☒ KML file has been provided

The MNRP area is located in the central part of the Congo River basin of the Democratic Republic of Congo (DRC, formerly Zaire). Administratively, it is located in the province of Mai Ndombe (formerly Bandundu Province), District of Lake Mai Ndombe, and the territory of Inongo, and encompasses three sectors: Ntomba, Basengele, and Bolia. The conservation concession covers 299,640 hectares (ha) of terra firma forest (upland non-inundated forests), swamp forest (inundated and seasonally inundated forests), savanna, and inundated grassland (see section G1.2 of the MNRP VCS PD for further definition of these land cover types).

The concession is located approximately 395 km northeast of the national capital, Kinshasa. It can be accessed from Kinshasa by air via the town of Inongo, by boat along the Congo and Fimi rivers, or by land via a recently repaired road that runs from the village of Selenge southward through Bandundu province to Kinshasa. The concession runs along the western shore of Lake Mai Ndombe (formerly Lac Leopold II), with the nearest major population center of Inongo (pop 110,000) situated 20 km across the lake and accessible to the concession by boat. There have been no changes made to the project area since the project's validation.

The project area is located on the West shore (to the East) of Lake Mai Ndombe, between the lake itself and the Bolipa Mpe (Boruampe) River to the West, and between the Lokeke River to the South and the Bolog'o Lule River to the North (Table 2-1. Project location and administrative jurisdictions). The project area is bound between 1°43' S, 17°50' E (NW corner), 1°43' S, 18°00' E (NE corner), 2°23'S, 18°15' E (SE corner), and 2°22'E, 18°00' E (SW corner).

Table 2-1. Project location and administrative jurisdictions

Conservation concession area	299,640 ha
Province	Mai Ndombe
District	Mai Ndombe
Territory (Territoire)	Inongo
Sectors (Secteurs)	Bolia, Basengele, Inongo
Groupments (Groupements*)	Bolia (Lokanga), Ngongo (Basengele), Ntomba-Nzale (Inongo)

* The Groupement is the traditional, smallest level of government in the DRC. Groupements are governed by traditional "Chefs des Terres" (Heads of the Land).

Please refer to the MNRP PD for a more detailed description of the project location, including the geology, geomorphology, climate, and the vegetation.

Additionally, Project location maps containing the VCS methodology (VM0009 V2.0) Monitoring Report Requirements (MRR) listed below are provided in Appendix 5 –Project Area, Topography, Infrastructure – roads and water bodies, land use / vegetation Cover.

According to VM0009 V2.0 MRRs, the geographic / physical boundaries of the project area must be clearly delineated and include, at minimum, the following:

- Project area name (compartment or allotment number, local name)
- Digital maps of the area, including geographic coordinates of Project area vertices
- Total Project area and Project accounting land areas
- Details of ownership, including user rights and/or land tenure
- Project area topography
- Roads
- Major rivers and perennial streams
- Land use / vegetation type classification

MRR.1 A digital (GIS-based) map of the project area with at least the above minimum requirements for delineation of the geographic boundaries

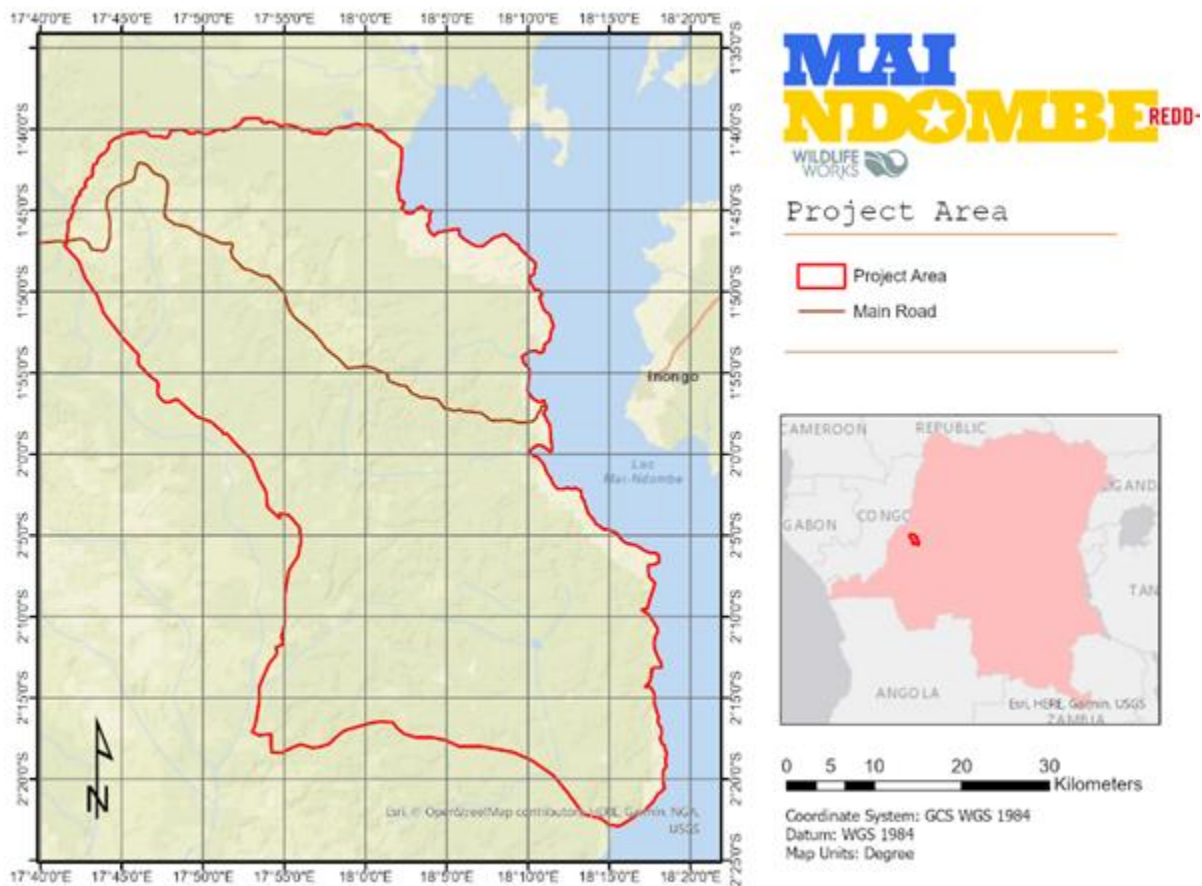


Figure 2.1 Mai Ndombe Project Area

MRR.6 A digital (GIS-based) map of the project accounting areas with at least the above minimum requirements for delineation of the geographic boundaries.

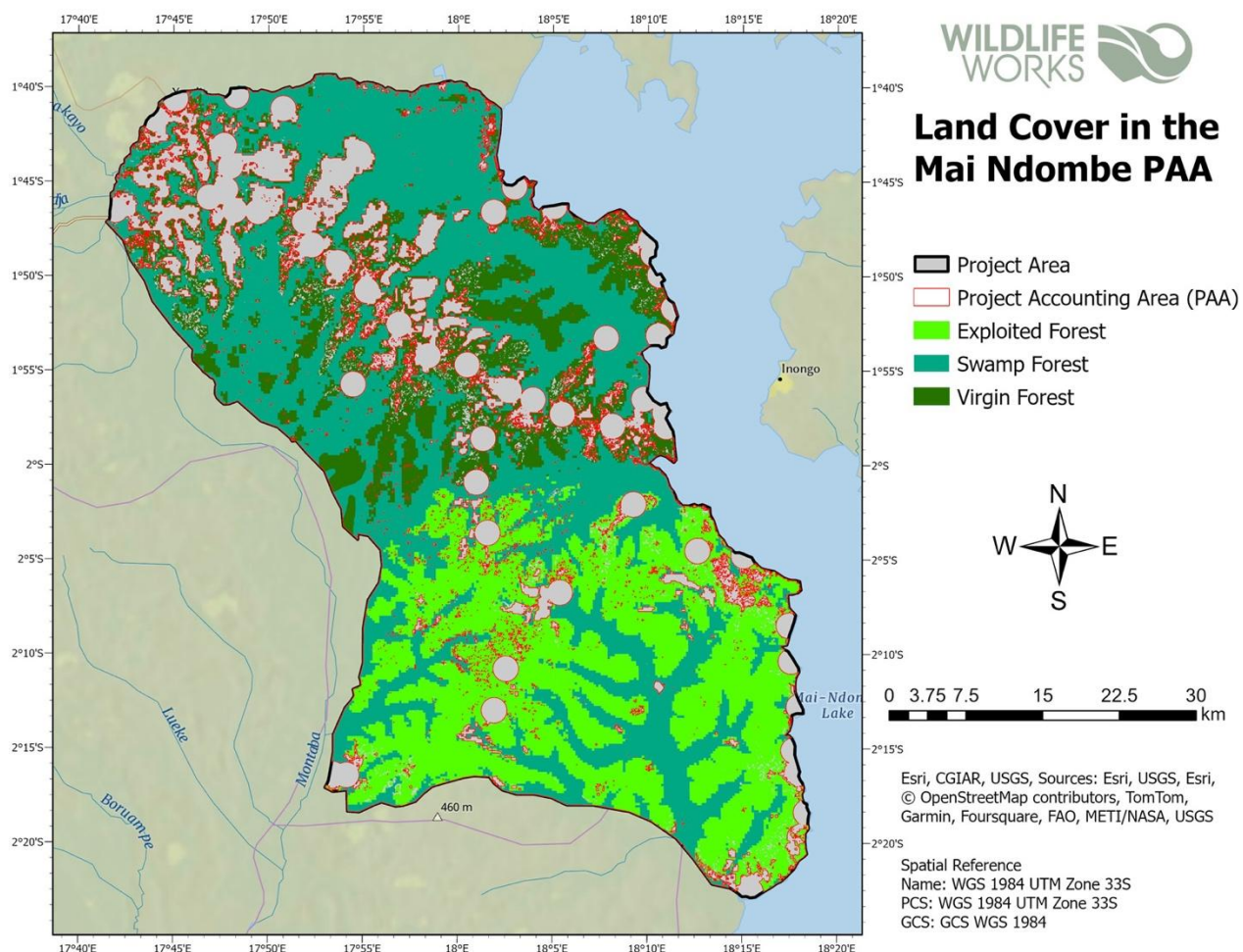


Figure 2.2 The Mai Ndombe Project Accounting Area and Land Cover Classes

Project Area Boundaries: The MNRP replaced two timber concessions and was re-gazetted as a single conservation concession. The Project Area consists of the terrafirma forested parts of the two former logging concessions, now forestry certificate (permit) numbers 004/84 and 014/2004 shown in Figure 2.2. The Project Area is located on the west shore of Lake Mai Ndombe.

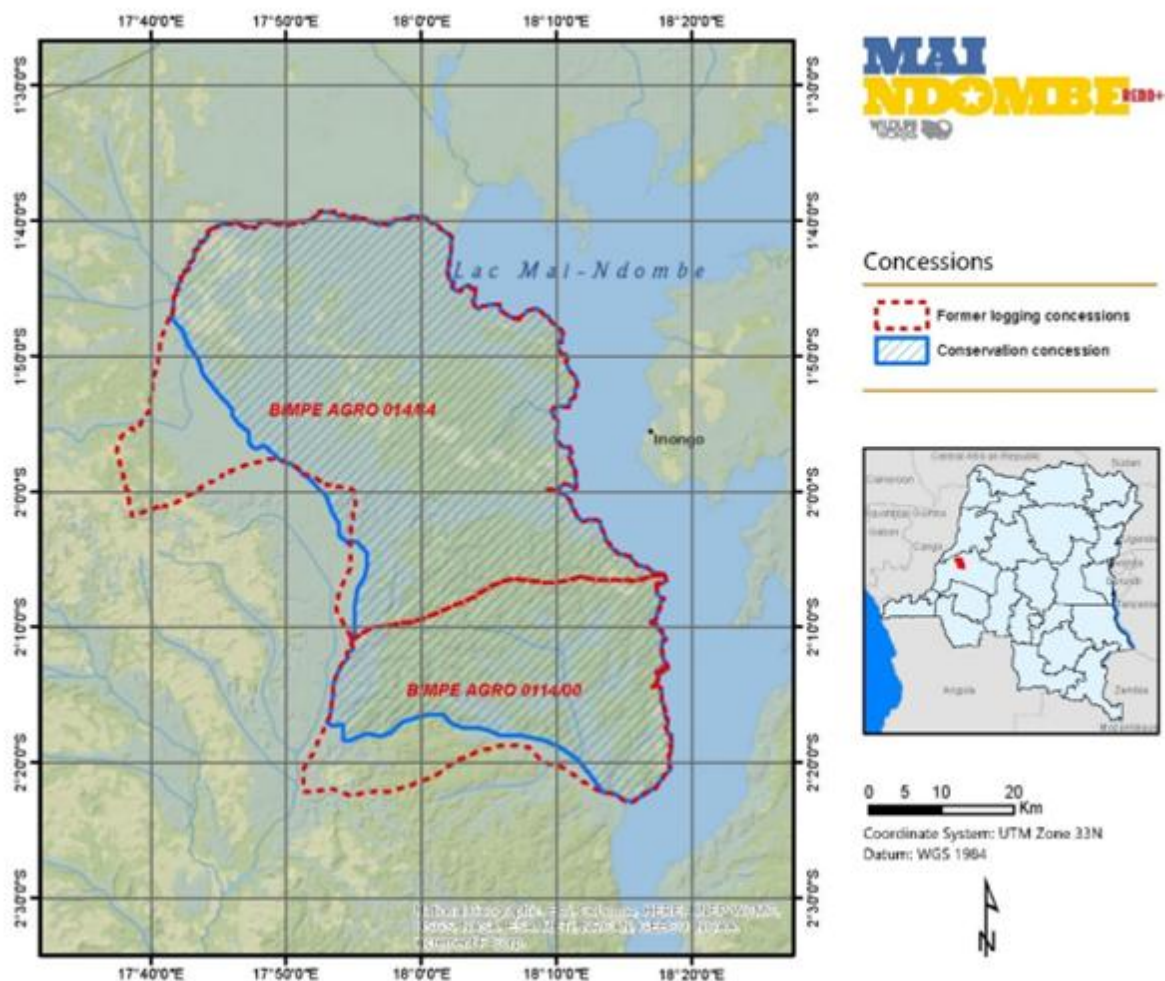


Figure 2.2 Lac Mai Ndombe REDD+ Project Area and the 2 former logging concessions it replaced

Table 2-2 Project Zone Boundaries

Boundary	Location
Northern Boundary	Olong'O Lule River
Northern Extent	Lat 1°39'2.87" S Long 17°52'9.95" E
Southern Boundary	Lobeke River
Southern Extent	Lat 2°22'52.04" S Long 18°15'28.95" E
Eastern Boundary	Lake Mai Ndombe
Eastern Extent	Lat 2°19'21.90"S Long 18°18'36.78"E

Western Boundary	Montaba River (which becomes) Boruampe River
Western Extent	Lat 1°45'50.43" S Long 17°41'45.20" E

The project area is bordered by rivers or the lake for most boundaries. However, several villages were included in project activities and selected for inclusion in the Project Zone. Table 2-3 lists reasons for inclusion and a map of the Project Zone is shown below in Figure 2.3.

Table 2-3 Project Zone boundaries and justification

Boundary	Location	Justification for Inclusion or Exclusion
Northern Boundary	Olong'O Lule River	Runs along the north of the project area.
Northern Villages Included	Lukanga, Ikita, Nsongo, Belee1, Belee2, Ndonga	Lokanga is the seat of authority for the Lokanga Groupement. Ikita is a Pygmy village located between the project area boundary and Lukanga. Some project activities will be located in these villages and some migration in and out of the project area may occur.
Southern Boundary	Lobeke River	Runs along the south of the project area.
Southern Villages Included	Bosenge, Mbuba	Much of the Lobeke River is a government-recognized administrative boundary between two secteurs as well as the boundary between two tribes. The villages included in the project zone are the southernmost villages of the Ntomba Groupement.
Eastern Boundary	Lake Mai Ndombe	Eastern boundary of project area.
Eastern Villages Included	Inongo	A city of over 100,000 residents, and trading hub as well as the location of the Mai Ndombe project head office.
Western Boundary	Montaba River which becomes	Runs along western boundary of project area.

	Boruampe River	
Western Villages Included	Villages within 15 km on the road running to the northwest out of the project area	Most of the communities outside of the project area are isolated by distance and lack of infrastructure. However, communities located on or near the roads heading northwest out of the project area will be included up to 15 km (estimated as a day's walk).



2.1.9 Title and Reference of Methodology (VCS, 3.1)

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Methodology	VM0009	VM0009 REDD+ Methodology for Avoided Ecosystem Conversion	2.0
Tool	VT0001	Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities.	3.0
Tool		AFOLU Non-Permanence Risk Tool	4.2

2.1.10 Double Counting and Participation under Other GHG Programs (VCS, 3.23; CCB V3, G5.9; CCB V2, CL1.5)

The project is not registered with and has not sought registration with any other emission trading programs. Additionally, the project has not received or sought any other form of social or environmental credit.

The Mai Ndombe REDD+ Project has been nested into the Mai Ndombe Province World Bank Forest Carbon Partnership Facility's Emission Reduction Program (FCPF ER Program). While the project is not registered to the FCPF ER program itself, it is included in the programme design and benefit sharing plan. As the start date for the FCPF program was January 1, 2019, ER program performance has only been measured for 2019 and 2020 thus far. The Project does not issue any GHG emission reduction credits under the FCPF ER programme, nor are any credits claimed by the Project or from the project area included under any other GHG program. The only GHG emission reduction credits issued by the Project are those documented in this monitoring report based on the Project's validated baseline issued under the VCS standard. Additionally, the FCPF ER program does not claim any credits from the Mai Ndombe REDD+ Project area. Wildlife Works has an agreement with the DRC government to deduct any issued VCUs from the Mai Ndombe REDD+ Project area from the FCPF ER Program's jurisdictional performance before any jurisdictional credits can be sold to the Carbon Fund. This ensures no VCUs are double counted. We will continue to work with Verra to ensure that the Project maintains compliance with VCS requirements.

2.1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program, or any other form of community, social, or biodiversity unit or credit?

☐ Yes

☒ No

2.1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

2.1.10.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

2.1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions (VCS, 3.24)

2.1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the VCS Program Definitions for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

2.1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the VCS Program Definitions for definition of GHG-related environmental credit system.

☐ Yes ☒ No

2.1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

2.1.12 Sustainable Development Contributions (VCS, 3.17)

The REDD+ activities in the MNRP are aligned with the SDG priorities identified by the DRC government and the Observatoire Congolais du Développement Durable (OCDD), its instrument for monitoring, assessing and reporting on SDGs implementation¹⁵. The full contributions of the MNRP towards SDG goals are in Table 2.4.

During M5, the MNRP contributed towards these nationally prioritized SDG targets: 2.3 and 2.4 by improving food production systems setting up a second agriculture village and 26 demonstration gardens, 3.3 and 3.8 by deploying five mobile clinics and providing healthcare to 15,707 people, and 4.1 by supporting the graduation of 850 students.

¹⁵ According to the DRC Voluntary National Review 2020, SDG priorities include strategic efforts to combat hunger and malnutrition (Goal 2), budgetary allocation to the health sector to work towards Universal Health Care (Goal 3), and efforts to provide access to education for all (Goal 4) among others. [Democratic Republic of the Congo ∴ Sustainable Development Knowledge Platform \(un.org\)](#).

Table 2-4: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions (2022-2023) ¹⁶	Contributions over project lifetime
1)	1.4	1.4.1 Proportion of population living in households with access to basic services	Implemented activities to increase	During the monitoring period, access to basic services has improved through the construction of five schools, repair of bridges in the project area, digging of 21 wells, and establishment of a mobile medical clinics, VHF radio network, and emergency medical response systems	Over its lifetime, the project has led to an overall improvement in access to basic services in the area including educational infrastructure, access to safe drinking water, improved communication and transport infrastructure, and improvements to the medical system

¹⁶ See appendix for evidence supporting the SDG contributions.

2)	1.4	1.4.2 Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure	Implemented activities to increase	Participatory mapping to inform land management and election and training of 120 members of 8 Local Development Committees (CLDs) who are responsible for local land governance	Participatory mapping and establishment and management of LCDs have improved local administrative capacities and strengthened land governance
3)	2.3	2.3.2 Average income of small-scale food producers	Implemented activities to increase	In 2022, a second agriculture village was set up in Nkondi village after testing the concept in Loombe village. During this monitoring period, 51% of households adopted new farming methods, disaggregating new crops, livestock enclosures, or agroforestry, and a 69% increase in productivity has been reported.	Through the project's agricultural intensification and diversification initiatives, incomes and wellbeing of small-scale farmers in the project area have been improved. This includes through adoption of improved yield cassava, setting up of agriculture villages that help to increase vegetable and meat production on the community farms, and the production of diverse agricultural products that are used for household use as well as for sale.

4)	2.4	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	Implemented activities to increase	During M5,26 demonstration gardens were established, and qualified agricultural extension officers have been working with community members across the entire project area for commercial crop production (e.g., onion and tomatoes). A total of 2110 community members visited the demonstration gardens during this monitoring period.	The project is promoting sustainable development through advancement of sustainable agriculture through agriculture intensification. Improving agricultural production and producing economically viable crops is one of the most effective ways to improve community economic situation and livelihood
5)	3.3.	Establishment of healthcare centres and provision of medication to fight epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	Implemented activities to decrease	Through partnership with local government, the project has engaged in establishing, equipping and deploying five mobile clinics in 2022. The clinics are aimed at fighting epidemics and providing medication for local health care facilities and improving these facilities. We treated and cured 503 children with measles.	Improvement in the healthcare network in the project area has been among the key project activities in the MNRP over the project's lifetime.

6)	3.8.	3.8.1 Coverage of essential health services	Implemented activities to increase	The project has seen improvement in health services for 15,707 people during 2022.	In total, the project has led to improvement on health services for 31,833 people over its lifetime (up to 2022)
7)	3.b	3.b.1 Proportion of the target population covered by all vaccines included in their national programme	Implemented activities to increase	The establishment and equipping of mobile clinics in the project area has facilitated vaccination or treatment of 775 patients in 2022	Over the timeline of the project, a total of 17,922 patients have been treated at the mobile clinics and healthcare centres funded by the project
8)	3.b	3.b.3 Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis	Implemented activities to increase	The project facilitated establishment/ repair and equipping of five small clinics in 2022	The project has prioritized funding and support of healthcare services since its inception, including deployment of 93 mobile clinics and repair/ building of five healthcare centres during the project lifetime.
9)	4.1	4.1.2 Completion rate (primary education, lower secondary education, upper secondary education)	Implement activities to increase	Investments in education in the project area have helped increase the number of students graduating with a state diploma (upper secondary qualification). In 2022 850 students graduated with a state diploma	Investments in education in the project area have helped increase the number of students graduating with a state diploma (upper secondary qualification) over the lifetime of the project.

10)	4.5	4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quantile and others such as disability status, indigenous peoples and conflict-affected), as data become available for all education indicators on this list that can be disaggregated	Implemented activities to increase	The project has improved access to or quality of education, employment, health, clean water, and improved livelihoods for women and girls during the fifth monitoring period. Out of 2,323 people employed by the project, 904 were women. The project also helped to improve livelihoods for 325 people with 211 women benefiting. Health services were improved for 8,502 women out of 15,707 people, improved access or quality of education for 3,709 women out 7,920 people, and increased access to clean drinking water for 9,507 women out of 13,500.	The community benefits attained over the project lifetime have benefitted many women. Gender disaggregated numbers continue to help to determine the impact of project activities on women.
11)	4.a	4.a.1 Proportion of schools offering basic services, by type of service	Implemented activities to increase	The project completed the building/renovation of five schools serving 7,920 beneficiaries in 2022.	30 schools have been built or repaired over this project's timeline.
12)	4.c	4.c.1 Proportion of teachers with the minimum required qualifications, by education level	Implemented activities to increase	The project employed 700 new teachers to work in local schools in 2022.	In total, the project has employed 2,433 teachers in schools within the project zone to date.

13)	6.1	6.1.1 Proportion of population using safely managed drinking water services	Implemented activities to increase	During the monitoring period, 21 new water wells were built or repaired to provide potable water to 27,615 members of the local community.	In total, the project has built 41 wells to provide potable water to the community. 53,191 community members have been beneficiaries of the clean water well over the project's timeline
14)	8.5	8.5.2 Unemployment rate, by sex, age and persons with disabilities	Implemented activities to decrease	The project created eight jobs throughout its operations in 2022.	A total of 123 jobs have been created over the project timeline.
15)	8.8	8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status	Implemented activities to decrease	The company held one training session on occupational health and safety in 2022, during which 20 staff were trained on OHS. Zero OHS-related incidents were reported across all project operations in 2022	The project has created a comprehensive health and safety plan that ensures protection of all workers and has conducted training sessions to ensure that all workers are fully informed of workplace risks and practices to mitigate them. These risks include risks to field research teams and community relations teams such as challenging terrain, encounters with wild animals or people involved in illegal activities who may pose a threat to workers' safety

16)	9.1	9.1.2. Passenger and freight volumes, by mode of transport	Implemented activities to increase	The project continued to fund and support 8 passenger boats to provide free transportation services for local community members and their goods. The boats ferried 218 community members across lake Mai Ndombe during the monitoring period.	Over the projects' lifetime, the company has funded successfully supported the running of 9 passenger boats which have eased transport for community members to trade and access services in Inongo, the nearest centre.
17)	13.2	13.2.2 Total greenhouse gas emissions per year	Implemented activities to decrease	During the monitoring period, the Project achieved a net emission of 4,782,428 tonnes of CO ₂	The project continues to achieve net emissions reduction by preventing deforestation and forest degradation through planned logging, illegal logging and though slash and burn agriculture that typically follows logging.
18)	15.1	15.1.1 Forest area as a proportion of total land area	Implemented activities to increase	The project has protected 248,956 ha of forest up to and during the monitoring period through prevention of deforestation and forest degradation	The project has protected 248,956 ha of forest over its lifetime

19)	15.2	15.2.1 Progress towards sustainable forest management	Implemented activities to increase	See reporting over project lifetime	The project signed one (1) forest conservation concession contract with supporting documentation as of 2022. This document allows the community to sustainably manage and use their natural resources according to their own modes of governance and supports sustainable forest management when implemented alongside the company's REDD+ model which is co-designed and managed with the local community.
20)	15.5	15.5.1 Red List Index	Implemented activities to decrease	The project has protected 3 species listed as endangered or critically endangered on the IUCN red list by protecting the habitats and reducing threats to these species during the monitoring period.	The project has conserved three IUCN-listed species by protecting habitats and reducing threats to the bonobo (<i>Pan paniscus</i>), the Giant Ground Pangolin (<i>Smutsia gigantea</i>) and the (<i>Loxodonta cyclotis</i>), the latter of which has returned to the area over the project's lifetime.

21)	15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products	15.7.1 Proportion of traded wildlife that was poached or illicitly trafficked	Implemented activities to decrease	During this monitoring period, the project continued a number of activities to reduce poaching: biodiversity monitoring, provision of alternative livelihoods and incomes to reduce bushmeat demand, and market surveys to monitor bushmeat trade activities in the local market and Inongo port. In 2022, 30 permanent transects were laid out across the five major forest strata to monitor large mammals, birds, and human activities including poaching, and 21 market surveys were conducted.	Over the project timeline, the project has put in place several monitoring measures to combat poaching and trafficking of wildlife. These include monitoring of large mammals, birds and human activities such as hunting through biodiversity monitoring, market surveys, camera trap data as well as training of community eco-guards who support the monitoring activities
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22)	15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities	15.c.1 Proportion of community pursuing sustainable livelihood activities and alternative protein sources (user defined indicator)	Implemented activities to increase	The project carried out ten awareness and sensitization meetings on biodiversity and natural resources management with a total of 675 people trained. The project also provided support to boost alternative protein sources (including introducing two fish farms and livestock enclosures in one village during the monitoring period) to reduce reliance on bushmeat).	Over its lifetime, the project has combatted poaching and trafficking of protected species through awareness raising, promotion of alternative livelihoods including sustainable agriculture, and provision of alternative protein sources. Combined with biodiversity monitoring activities (15.7 above), this has led to a reduction in hunting in the area, as shown in the market survey results from Inongo market, which indicates a drop in animal species coming from the concession compared to recent years.
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2.2 Project Implementation Status

2.2.1 Implementation Schedule (VCS, 3.2; CCB V3, G1.9)

The main project activities are described in the Concession Contract under the Social Clause (Cahier de Charge) that was signed between the Minister of the Environment and the project proponent in August 2011. These activities include:

1. Construction of four large school buildings in Lokanga, Kesenge, Ngongo and Lobeke to accommodate public schools (mostly unhoused) for these villages; construction of six medium-sized schools in six more villages and ten buildings to accommodate primary schools in small villages.
2. Improve the healthcare network in the project area through (1) the rehabilitation of the secondary hospital of Lokanga and Ngongo, and (2) the construction of buildings for one secondary hospital in Lobeke and five small clinics throughout the project area.
3. Improve the local community's livelihood through enhanced sustainable agriculture and high agricultural productivity.
4. Maintenance and capacity building for Local Development Committees (CLDs) in each village and Groupement.

Table 2-5 Project implementation schedule

Date	Milestone(s) in the project's development and implementation
Sept. 2009 – March 2011	Consultation for Free Prior Informed Consent (FPIC) process
14 March 2011	Signature of the Carbon Right Agreement
26 March 2011	Signing of Social Chapter by local communities
August 2011	Signature of the Forest Conservation Concession Contract
2 August 2011	Inauguration of activities (Minister of Environment) with the construction of the first school in Kesenge
October 2011	Debut of school construction in Lokanga and Kesenge
February 2012	Inauguration of the first school in Lokanga (Minister of Environment)
February 2012	Organization and capacity building for Local Development Committees in villages (Start date)

February 2012	Information, Education and Communication (EIC) program (Start date)
September 2012	Agriculture Intensification and Agroforestry (Start)
15 September 2012	First field audit
April 2012	Technical Review of the first two schools
May 2012	Acquisition of construction materials for schools in Lobeke, Mpata-Mbalu, Mbale and Ikita.
June 2012	Fabrication of blocks for schools in Mbale, Lobeke and Mpata-Mbalu
M2	Mobile medical clinic in selected villages in the project area
M2	Biodiversity monitoring reveals return of elephants in the project areas
24 October 2017	VCS and CCB M2 audit (1 November 2012 – 31 December 2016)
October 2017	School building construction
December 2017	School building construction
February 2018	School building construction
April 2018	Cassava production
August 2018	School building construction
December 2019	Health center construction
February 2020	School building construction
July 2020	Sheep and cattle breeding
October 2020	School building construction
October 2020	School building construction
November 2020	School building construction

December 2020	Drilling
November 2020	Pond construction
December 2020	Development of community fields for mothers
August 2021	Infrastructure vocational training
October 2021	Infrastructure vocational training
December 2021	Infrastructure vocational training
December 2021	Agricultural intensification training
March 2021	Agricultural intensification training
March 2021	Biomass sampling training
November 2021	Biodiversity monitoring training
November 2021	School construction in Illea completed
November 2021	School construction in Mankaba completed
September 2021	School construction in Nselenge A completed
November 2021	School construction in Nkondi completed
June 2021	School construction in Inunu completed
June 2021	Fish pond in Loombe completed
February 2021	Women's empowerment group pig farming activity implemented
October 2021	Training of the Organization of the bases on new agricultural techniques
Jan-Dec 2022	Biodiversity sampling

March 2022	VCS and CCB M3 audit (1 January 2017 – 31 December 2020)
September 2022	School in Nselenge (A) completed
November 2022	VHF radio network installed
November 2022	School in Nkondi completed
December 2022	Four new supply boats arrived in Inongo
December 2022	Schools in Mpatambalu, Loombe, and Mbwenzey completed
June 2023	VCS and CCB M4 audit (1 January 2021 – 31 December 2021)

Sales points for manufactured goods and commodities and providing communication points for villagers

The sale point activity was not implemented during the monitoring period due to difficult access to and from the market. The company is now partnering with local businesses who are selling manufactured goods in the Inongo market. The company provides foreign currency in Inongo in exchange for local payment in Inongo to avoid transferring local currency to Kinshasa using unsecure money transfer methods and to facilitate availability of foreign currency for payment.

The project has provided television access points to 14 villages in the project area including satellite TV dishes and television. Most of this equipment is working properly. However, electricity is still an issue for operation. The company is discussing with a private entity now in Kinshasa that will provide electricity from solar energy to villages at the communication access point and for charging telephone.

A VHF radio network was installed in 2022 to help project staff communicate across the project area. The VHF radio network covers Inongo, the lake, and the majority of the project area. A broadcasting tower was installed in Inongo and transmission is able to be received at least 30 km away in Lukanga (Figure 2.4). This improves efficiency for the project operations and increases communication access in the case of an emergency, which can be used for villagers and staff.

Four new 20-ft supply boats (Figure 2.5) were delivered to Mai Ndombe in December 2022, after traveling more than 1000 km down the Congo River from Kinshasa to Inongo. The four new boats have Yamaha F150 4-stroke engines and VHF marine radios, which work with the

wider VHF network that was set up during the monitoring period. Wildlife Works/ERA Congo employs a team of pilots, skippers, mechanical and diesel engineers based in Inongo to service the fleet, which includes the new boats and other vehicles.

The supply-boats are each outfitted with a bathymetric scanner coupled with a sounder for mapping of the bottom of the lake and rivers. The data from these will be used to create the first ever bathymetrical map of Lake Mai Ndombe. This work will lead to better understanding of the biotope of the aquatic environment, better monitoring for our biodiversity work, more accurately planning our aquaculture program, and charting navigational hazards. Additionally, the boats will be used to help improve market access in the future.

During the monitoring period, the project received six 24-ft workboats with outboard engines, bench seats and canopies. The work boats are used to improve communication between work sites and with the main field office in Inongo. They increase the speed at which supplies and people can be transported. They are used to carry sand, gravel, people within a radius of 5 km of the work site, being a school or a clinic, or pilot farming.



Figure 2.4 The VHF signal being received in Lusaka (left) and the new VHF tower in Inongo (right).



Figure 2.5 Supply boats delivered to Inongo during the monitoring period.

2.2.2 Baseline Reassessment (VCS, 3.2.6, 3.2.7)

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

2.2.3 Methodology Deviations (VCS, 3.20)

Deviation from monitoring schedule

The methodology VM0009 V2.0 Section 9 stipulates “all plots and all strata in the project and the activity-shifting leakage areas shall be re-measured at least every five years, a process which may be accomplished on an intermittently rotating basis.” During M4, 55 of the 163 biomass plots were remeasured (33.7%). However, some existing plots have not been remeasured within the 5-year threshold, which represents a deviation from the monitoring criteria in Section 9. The standard error for the final plots included in the model during M4 was calculated at 7.8%, well below the material threshold for VCS standard, and therefore does not affect the conservativeness of GHG emission reduction / removal quantification.

The deviation relates only to Section 9 of the methodology, “MONITORING” and therefore does not affect any other part of the methodology. This deviation does not affect the conservativeness of the quantification of the GHG emission reductions.

It was discovered that equation [F.10] in the methodology VM0009 V2.1 for DEM DW, BGB, was written incorrectly. This error was identified previously and corrected in VM0009 V3, where

equation [F.10] has been revised, however this corrected form was inadvertently not used in the Mai Ndombe NER model. This has now been corrected in the Mai Ndombe NER model. As we now use the corrected VM0009 V3 equation [F.10] as opposed to V2.1 [F.10], this represents a deviation from the monitoring criteria in Section 9 of the applied version of the methodology for the project.

The deviation relates only to Section 9 of the methodology, “MONITORING” and therefore does not affect any other part of the methodology. This deviation does not affect the conservativeness of the quantification of the GHG emission reductions.

Deviation Regarding Measurement of Leakage

During the M4 monitoring period, Verra requested that the project investigate deforestation and the potential for project leakage in areas that are within the Project Area but were removed from the Project Accounting Area at Project Start for use as community areas in accordance with the Cahier de Charge agreement. At project development and validation, it was determined that due to the specifics of the baseline scenario, under the with-project scenario, the project would not result in any activity-shifting leakage. Therefore, the procedures under VM0009 to establish a leakage area or an activity-shifting leakage baseline were not utilized. Under VM0009 the activity-shifting leakage area cannot include any area of the Project Area; the area of concern identified by Verra is within the Project Area, but outside of the Project Accounting Area. Activity-shifting leakage has not been measured during the first 9 years of the project (2011-2020). Therefore, to comply with Verra’s request to quantify potential activity-shifting leakage caused by the project, the project had to deviate from the methodology’s activity-shifting leakage measurement procedures and develop a new method based on the availability of data and the specifics of Verra’s request. This deviation is inherently conservative as it results in a reduction of the quantified emission reductions. This deviation deals predominantly with the monitoring of the project and emission reductions produced by the project.

The deviation relates only to Section 9 of the methodology, “MONITORING” and therefore does not affect any other part of the methodology. This deviation does not negatively affect the conservativeness of the quantification of the GHG emission reductions.

The same activity-shifting leakage assessment was conducted again for the M5 monitoring period. This analysis and the resulting project emission is detailed in section 3.2.3.2 of the MR.

2.2.4 Minor Changes to Project Description (CCB Program Rules, 3.5.6)

Fourth Monitoring Period (M4)

During the M4 monitoring period, Verra requested that the project investigate deforestation and the potential for project leakage in areas that are within the Project Area but were removed from the Project Accounting Area at Project Start for use as community areas in accordance

with the Cahier de Charge agreement. As at project development and validation it was determined that due to the specifics of the baseline scenario, under the project scenario the project would not result in any activity-shifting leakage, the procedures under VM0009 to establish a leakage area or an activity-shifting leakage baseline were not utilized. To comply with this request by Verra the project is making a change to the project monitoring as described in the PD to include the measurement of activity-shifting leakage during this M4 (2021) monitoring period.

Fifth Monitoring Period (M5)

The same activity-shifting leakage assessment as performed in M4 was conducted again for the M5 monitoring period. This analysis and the resulting project emission is detailed in section 3.2.3.2 of the MR.

2.2.5 Project Description Deviations (VCS, 3.21; CCB Program Rules, 3.5.7 – 3.5.10)

There were no Project Description deviations during this monitoring period (M5). PD Deviations from Prior Monitoring Periods are listed below for documentation purposes:

Second Monitoring Period (M2):

Modification of CCB monitoring indicators

For the MNRP, the CCB monitoring indicators as per CCB v2 were required to be validated as part of the CCB monitoring plan prior to implementation of the project activities that they describe. As part of our adaptive management plan, we evaluate the indicators themselves for appropriateness and ease of quantification. During M2, several indicators were identified as difficult / impossible to quantify and for others, the reporting frequencies were determined to be unrealistic. As such, we have opted to modify the CCB monitoring indicators as follows:

1. modify the reporting frequencies for those indicators where the frequency was observed to be inappropriate;
2. modify the reporting units for those indicators where the units were previously observed to be difficult to quantify and
3. remove those indicators that were observed as difficult / impossible to quantify.

Details for the modified or discarded indicators have been provided to the VVB.

A. Modification of the project proponent

In the Project Description of the MNRP the Project Proponent is listed as being jointly Wildlife Works Carbon and ERA Ecosystem Restorations Associates. In 2013, Wildlife Works Carbon bought out ERA's share of the project, to become the sole Project Proponent. The Deed of Partial Release was filed with the VCS on 16 December 2013.

Fourth Monitoring Period (M4) PD Deviations:

During M4, we reduced the original total number of biomass plots from 449 to 163. The Mai Ndombe REDD+ Project was designed and implemented early-on in the overall development of

REDD+ projects under the VCS standard. The forest inventory sample plots were set up utilizing sample plot locations that had been previously established for earlier academic research with additional plots added to ensure good geographic distribution. Over time as remote sensing methods have improved and high-resolution imagery has become increasingly available the forest inventory plots have not played as significant of a role in the detection of forest disturbances as they were originally intended to do. The high number of sample plots has been found to be greatly in excess of the number needed to meet the required standard error at the desired level of confidence. The resource burden of measuring 449 plots far outweighed the benefit from achieving an extremely low standard error, which we can easily achieve using the lower number of plots. Based on testing completed with forest inventory data from previous sample plot measurements, it was determined that the project could meet its data quality needs with fewer plots, enabling the project to redeploy staff and resources to more valuable tasks. The Winrock Sample Plot Calculator was used to calculate the number of sample plots needed to estimate terrestrial carbon stocks, based on a specified targeted precision. The strata area, mean biomass and standard deviation from the previous monitoring period (M3), were used as inputs for the tool. The standard error from the M3 carbon model was converted to standard deviation which was used as another input. The plot radius of 15 m (0.1 ha) and an error of 10% at 90% confidence was maintained. After adjusting the “percent additional plots” to 200% of the recommended value (55), the final plot quantity was set at 162. This demonstrated that the project had an excess of plots over what is needed to achieve the requirements on accuracy and uncertainty. The number of each plots in each stratum were reduced by randomly selecting plots from the existing plot list and removing any plots that were within 1,000m. However, we did not adjust the number of swamp forest plots as the total original number was 82 and the recommended number was 81 plots. Therefore, the final number of reduced biomass plots is 163.

Fifth Monitoring Period (M5) PD Deviations:

Due to the determination that there is peat present in the PAA, the area of peat has been removed from the soil emissions model. The area of peat was determined using the peat probability map produced by (Bwangoy et al. 2010)¹⁷. As a result of this change the the area of soil carbon accounting has been reduced from the total PAA (248,959 ha) to 91,724 ha. This is a conservative change that results in reduced emission reductions from soil carbon. This deviation does not impact the applicability of the methodology, the project additionality or the appropriateness of the baseline.

¹⁷ Bwangoy, Jean-Robert B., Matthew C. Hansen, David P. Roy, Gianfranco De Grandi, Christopher O. Justice. 2010. Wetland mapping in the Congo Basin using optical and radar remotely sensed data and derived topographical indices. *Remote Sensing of Environment* Vol. 114, Iss 1 (15 January 2010) pg 73-86

Additionally, due to the determination that there is peat present in the PAA and PA, the emissions from peat resulting from deforestation will be included in the calculation of project emissions from disturbance events and activity-shifting leakage. This is a deviation from the PD and from prior deviations listed above. Please see sections 3.2.2.2 and 3.2.3.1 to see details of this deviation and the calculations. This is a conservative change that results in larger project emissions and activity-shifting leakage. This deviation does not impact the applicability of the methodology, the project additionality or the appropriateness of the baseline.

2.2.6 Grouped Projects (VCS, 3.6; CCB V3, G1.13-G1.15, G4.1)

This section is not applicable, as the MNRP is not a grouped project.

2.2.7 Risks to the Project (CCB V3, G1.10; CCB V2, G4.4)

Civil and political instability

The Democratic Republic of the Congo is still emerging from a prolonged period of instability and civil unrest. The Lake Mai-Ndombe area, however, has been minimally affected by this war and other upheavals that have recently occurred in the country. The last five years have been relatively free of unrest throughout the country. The effective administrative subdivision of the country into 26 new provinces has translated to a new provincial government including an executive branch and a local parliament. In fact, the Mai-Ndombe and Plateau Districts have merged to form the new Mai-Ndombe province. This has added to a slight political stability in the area. However, corruption and administrative harassment have been still significant in the entire country and specifically along the transportation water ways in the Mai-Ndombe province.

Even in this challenging time, the project has provided greater benefits to the community and to the new province above and beyond benefits brought by other interests. ERA Congo / WWC has provided a robust and fair benefit sharing procedure that provides protection for both the Carbon Rights Agreement and conservation concession contract. With the ongoing project activities, community support for the project has grown as the project management team has gained experience handling and resolving conflicts and dealing with a difficult administrative system.

Land tenure

A legal land concession over 299,640 hectares of land was granted to Wildlife Works and its subsidiary ERA Congo for conservation purposes by the DRC Government, who are the legal forest and landowners (Land Tenure Act - Loi Fonciere). To comply with the law and regulation, the Government has signed the Carbon Rights Agreement and the Forest Conservation Concession. In addition, the country has clearly shown its commitment to support forest conservation activities and specifically REDD+ programs as it is now the first country in the world to negotiate an Emission Reduction Purchase Agreement (ERPA) with the World Bank's Forest Carbon Partnership Facility. The country was among the first of 7 readiness countries

and has satisfied all required conditions for entering Emission Reduction (ER) purchase negotiations. WWC and its subsidiary ERA Congo SARL have been among the leaders in supporting the DRC Government to fulfill requirements from the FCPF rules.

The Mai-Ndombe REDD+ project has been fully integrated in the program and fits into the broad national REDD+ strategy which involves access to bilateral and multilateral donors such as the World Bank and the Central African Forest Initiative (CAFI) funded through a USD \$200 million grant from the Government of Norway. As part of this initiative, CAFI is funding forest conservation activities in the Mai-Ndombe which will certainly benefit the project, local communities and the provincial Government.

Local communities have customary land use rights for using local community land inside of the forest concession and for goods derived from working the land. These rights have not been clearly articulated in the Forest Code nor in the recently signed Decree related to Community Forests as no specific provision relates to industrial and/or Conservation Concessions. There is clearly a duality between the Government declared ownership to the forest and the practical and on-site claim for forest and land ownership from local communities. This situation is a source of conflicts between community members and forest projects proponents in the entire country. Free Prior and Informed Consent (FPIC) is a way of getting community members involved in the REDD+ process. In accordance with the provisions of our Concession Contract, local leadership and community members have been consulted in the process prior to the project start and consultation has been continued and will extend throughout the project life. Through the FPIC process and the process of signing Cahiers de Charges, community members have given their consent to develop a REDD+ project in their customary lands. ERA-Congo has been maintaining close contact and collaboration with these community members which has significantly minimized risks for community members to turn against the project. However, some resistance was encountered early in the project especially in the village of Mbale in the Lokanga Groupement, and Mbwenzey, Mpili and Ngongo in the Ngongo Groupement. The project has instituted a permanent dialogue with community members in these villages, which have now fully accepted the project. The project is now working with community members to build a school in Mbale and on sustainable agriculture while working in Mpili and Mbwenzey for agriculture intensification and building CLD capacities.

Illegal activities

The project has been monitoring any illegal activity in the project area since the project start date. Five attempts for illegal timber logging have been detected in villages within the project area: Kesenge, Bosongo, Nkondi, Mpata Mbalu and Mpi. These activities were stopped at an early stage, thanks to a close collaboration with local communities and local authorities. This shows that working alongside community members and local authorities helps minimize risks related to illegal logging.

Small scale unsustainable wood extraction for fuelwood, charcoal and local building supply has continued by design at a reduced pace outside of the project accounting area (PAA)

surrounding villages. This area has been agreed with the communities to be used as “community forest land”, allowing communities to expand their agricultural and small-scale timber extraction without the burden of reduced crediting. These areas are excluded from project carbon accounting as they were intentionally delineated outside the project accounting area so that community activities within them would not result in discounting. Moreover, the ongoing agriculture intensification program is designed to further help reduce unsustainable agriculture and therefore will contribute to increase conservation land. Wildlife Works does not manage these areas and is not responsible for permitting forest activities within these areas or within the project accounting area. Rather, we ensure community members are cognizant of the benefits that the REDD+ project brings to their communities and that continued deforestation within the PAA will reduce project crediting, and in turn community revenue share.

Fire, disease and other natural risks

The project area consists mostly of dense humid and semi-deciduous heterogeneous forests with a very low percentage of resinous trees. As such and because of the Congo Basin’s climatic regime which, unlike the Amazon has no ENSO-like drought event, these forests have inherently low susceptibility to catastrophic fire, insect disease and blow-down event.

However, as reported in the CCBA PD (see page 71), the project area experienced an exceptionally dry year in 2011 that led to important forest fires; mostly in the south-western part of the concession. That event is comparable to the amazon-like burn-event extensively described by Cochrane in numerous studies (See PD page 71 for references). Rampant forest fire from neighboring savannas outside the project area spread out to the forest in the project area, after crossing a dried-out swamp forest. Other fires expanded from burned savannas to neighboring forests in the same manner as described above and led to some forest loss.

It is difficult to fully address such a stochastic and unusual event in a very efficient way. However, going through meteorological archives available in Inongo may allow for monitoring the frequency of that event. Using these data, the project proponent is trying to understand the frequency to prepare to alleviate adverse effects of such a phenomenon in the future. The main mitigation measure is to work with local community members to raise awareness of the potential damage done to the forest by fire in order to avoid forest fires during dry years. In addition, we will actively monitor fire activities using satellite data (MODIS data has been used to document this event) and take corrective measures if necessary.

Identified risk	Potential impact of risk on climate, community, and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Civil and political instability	Corruption and administrative harassment remained widespread throughout the	The project has provided greater benefits to the community than those provided by other interests.

	country, particularly along the transport waterways in Mai-Ndombe Province. The civil and political instability limits trade and essential goods and services to the MNRP communities.	ERA Congo / WWC has provided a robust and fair benefit-sharing mechanism that protects both the carbon rights agreement and the conservation concession contract. As project activities have progressed, community support for the project has grown as the project management team has gained experience in managing and resolving conflicts and dealing with a difficult administrative system.
Land tenure	There is a clear duality between the government's declared ownership of the forest and local communities' practical, on-the-ground claims to forest and land ownership. This situation is a source of conflict between community members and forest project proponents throughout the country. This lack of clarity on land ownership and community rights over the customary land could lead to conflicts between the MNRP and some of the local communities. This issue could mean the loss of community benefits as well as the change in land use to other activities other than conservation resulting from tenure conflicts, causing a loss in biodiversity.	Through the FPIC process and the signing of the Cahiers de Charges, community members have given their consent to the development of a REDD+ project on their customary land. ERA-Congo has maintained close contact and collaboration with these community members, which has significantly minimized the risk of community members turning against the project. However, some resistance was encountered early in the project, particularly in the village of Mbale in the Lokanga Groupement and in Mbwenzey, Mpili and Ngongo in the Ngongo Groupement. The project has established an ongoing dialogue with community members in these villages, who have now fully embraced the project. The project is now working with community members to build a school in Mbale and on sustainable agriculture, while in Mpili and Mbwenzey it is working on agricultural intensification and CLD capacity building.
Illegal activities	Five attempts at illegal logging have been detected in villages within the project area:	Detected illegal logging activities were stopped at an early stage by working closely with local communities and local authorities.

	Kesenge, Bosongo, Nkondi, Mpata Mbalu and Mpi. Illegal logging causes habitat loss, which would have a negative impact on biodiversity. Small scale-logging also has an effect, particularly on species that are dependent on intact forest. Widespread illegal logging over a long period could also have an impact on the climate benefits in the region and beyond. Additionally, illegal logging has a negative impact on the community benefits because it risks the reduction of project credits and even reversal of the REDD+ project.	This shows that working with community members and local authorities helps to minimize the risks associated with illegal logging. Small-scale unsustainable logging for firewood, charcoal and local construction has continued at a reduced rate outside the project accounting area (PAA) around the villages Wildlife Works does not manage these areas and is not responsible for approving forest activities within these areas or within the project accounting area. Rather, we ensure that community members are aware of the benefits that the REDD+ project brings to their communities, and that continued deforestation within the PAA will reduce the project's credits and, therefore, the community's share of revenue.
Fire, disease and other natural risks	The project area experienced an exceptionally dry year in 2011, which resulted in significant forest fires, particularly in the south-western part of the concession. Rampant forest fires from neighbouring savannahs outside the project area spread into the project area forest after crossing a dried-out swamp forest. Other fires spread from burned savannahs into neighbouring forests in the same way as described above, resulting in some forest loss. Forest fires and other natural risks could mean the loss of biodiversity due to habitat loss and direct species impacts.	It is difficult to deal with such a stochastic and unusual event in a very efficient way. However, the meteorological archives available in Inongo can be used to monitor the frequency of this event. Using this data, the project proponent is trying to understand the frequency in order to prepare to mitigate the adverse effects of such a phenomenon in the future. The main mitigation measure is to work with local community members to raise awareness of the potential damage to the forest from fire, in order to avoid forest fires in dry years. In addition, we will actively monitor fire activity using satellite data (MODIS data was used to document this event) and take corrective action if necessary.

2.2.8 Benefit Permanence (CCB V3, G1.11; CCB V2, G4.6)

Empowerment and the building of capacity for local communities is the best guarantee of activity / benefit permanence beyond the project lifetime. Stakeholders have identified poverty is the most important enemy of conservation. By promoting education and providing novel techniques and economic benefits through improved agriculture and fisheries, the MNRP is empowering local community members, enabling them to produce goods and services in a sustainable manner. Communities have eagerly welcomed agricultural intensification and agroforestry activities. They have enjoyed producing valuable crops in areas close to their houses rather than spending vast amounts of energy for unsustainable, extensive cropping systems far away from villages that also contribute to the destruction of their forests.

While ERA Congo / WWC may request a renewal of the conservation concession beyond the project lifetime, we believe local communities will choose to further continue these activities as they enjoy reduced hard labor and increased benefit. Conservation of biodiversity and forests of course follows as a natural by-product of these sustainable socio-economic activities, which is of course the very aim of REDD+.

2.3 Stakeholder Engagement & Safeguards

2.3.1 Stakeholder Identification (VCS, 3.18, 3.19; CCB V3, G1.5; CCB V2, G1.5)

Stakeholder identification in the MNRP was carried out during the initial community outreach as well as during the development of the feasibility phase, the FPIC, the SBIA workshop and in workshops specifically dedicated to stakeholder identification, as described below:

Feasibility: Stakeholders were identified through dialogues established with various participants during the feasibility process. Informative meetings with communities in the Mai Ndombe region and attendance at events where the feasibility results were presented provided further insight into the community structure and stakeholders.

Free, Prior and Informed Consent (FPIC): The FPIC meetings, aimed at addressing people's concerns about the REDD+ project, allowed for the identification of stakeholders based on the different opinions and positions expressed by participants.

The land in the Project area is owned by the Government of the DRC. The Project has been granted management rights for the concessions by the Ministry of Environment, Conservation and Tourism (MECNT), as further described in Sections G1.6, G3.8, G5.1, G5.2 and G5.6 of the CCB PDD. Communities in the project area regulate resource use and access through customary laws and rights administered by local chiefs. WWC has adopted a multi-stage approach to stakeholder engagement and consent, which includes communicating key project information to stakeholders as it becomes available, and allowing stakeholders to influence

project design, air grievances, and give or withhold Free, Prior and Informed Consent (FPIC) to participate in project activities. This multi-stage stakeholder engagement and consent process is designed to continue throughout the life of the project. Documented consultations are described under each of the stages listed below. Further details on these phases are provided in Section G3.8 of the PDD. Dates, attendees, topics and often photographs of key community meetings are available at the Mai Ndombe project offices.

Informational meetings were held in each of the 23 main villages in the project area. At these meetings, ERA Congo (a subsidiary of WWC) was introduced, including its history and the concept of REDD, with a discussion of global climate change. The meetings typically lasted between two and six hours and were attended by between 20 and 100 adults. Villagers were encouraged to ask questions of ERA Congo and continued to discuss the project in traditional community-wide "palabres" (deep discussions). After several visits to the community, a consent form was introduced, and stakeholders were encouraged to discuss the merits of agreeing to project development without the company present.

After at least two days, ERA returned to each village to answer any further questions, continue the information exchange and collect the consent forms if they had been signed. Consent forms were signed in 100% of the communities where they were proposed. Following these meetings, Free Prior Informed Consent was given by the following clans: Ipokyetoyi, Ikoli, Basanza, Mpama, Mpatambalu, Mpatambalu, Bomwanza, Kesenge, Bomwanza, Mpama, Ibali, Ionka, Botongambela, Lobalu, Boongo, Boliombale, Boondo II, Mpenge, Mbongo, Ndomandala, Basobe, Ilee, Nyatotonga, Mpototonga, Ngelibenga, Bangaya, Mpama, Kesenge, Bompengo, Bokolo II, Kundo, Bopombo.

These clans have been allocated USD 500 per year as customary payment, in accordance with the Cahiers de Charge signed by ERA Congo with these communities, pending credit.

Social and Biodiversity Impact Assessment (SBIA): Wildlife Works holds Social and Biodiversity Impact Assessment (SBIA) community workshops to engage the community in thinking about how things would have been without the project, envisage how they may be with the project, and identify any potential risks and negative impacts.

For the MNRP, Wildlife Works held two community workshops reported in detail during M2. They identified six Focal Issues that they felt were both critical to their well-being and successful implementation of the REDD+ project. A result chain diagram was then produced for each issue during the workshops, which formed the basis of indicator identification and the monitoring plan.

The SBIA community workshop participants were also tasked with identifying possible risks to project success, as well as any unforeseen side effects from the successful realization of the desired results of the REDD+ Project (based on the Focal Issues they identified and associated theories of change).

2.3.2 Stakeholder Access to Project Documents (VCS, 3.18, 3.19; CCB V3, G3.1)

- Printed versions of the Project Description and Monitoring Report documents in French and Lingala are kept in the MNRP office for consultation with the community and other stakeholders.
- The Mai Ndombe office has the executive summaries of the PD and MR in French and Lingala for public access.
- The full PD and MRs in English, including their executive summaries, are available on Verra's website (www.terra.org). We notify stakeholders in every village that the report is online and that the public comment period for the project is open for a 30-day period. We also create a public notification in our company's office. However, due to the fact that stakeholders in the Mai-Ndombe have rarely access to the Internet, animateurs and facilitators go to villages to inform about the upcoming verification and the open public comment period through the CLD's. We also tell them that every one is welcome to send a comment related to the project document that can be found online. Also, as the full PD and MR documents online are always in English, facilitators provide a short information on the document.

2.3.3 Dissemination of Summary Project Documents (VCS, 3.18, 3.19; CCB V3, G3.1)

- The executive summaries of the PD and MR in French are made available in public places in the project area.
- The full versions of the PD and MRs and their executive summaries in English are made available on the Verra website (www.terra.org).
- Wildlife Works also uses notice boards and posters in the public areas of the Mai Ndombe area to communicate news, events and progress of the initiative.
- A sign or announcement in French and Lingala announcing the public comment period and the field validation visit will be posted in all communities in the project area, with details on how to submit comments to the CCB.

2.3.4 Informational Meetings with Stakeholders (VCS, 3.18, 3.19; CCB V3, G3.1)

During this monitoring period and the Mai Ndombe REDD+ project processes, several community meetings and workshops have been conducted for stakeholders, such as CLD meetings and meetings focusing on women's involvement and workshops on agricultural practices. A list of these meetings can be found in Section 2.3.9. A full report of the SBIA workshops and community meetings, including their outcomes, is available to the Validator. In addition, the project resolved seven cases of human-wildlife conflict during the monitoring period, as described in Section 2.5.10.

Informational meetings with communities and local stakeholders are publicized primarily through word of mouth. There is not reliable cell service in the project area villages and literacy rates are low, so even though fliers are put up for upcoming verifications, word of mouth is the most

reliable source of communication. Project facilitators tell animateurs and village chiefs of upcoming meetings, and village chiefs disseminate information throughout the village.

After community meetings, minutes are prepared by one of the community members and read to every participant who sign the document to show that they agree with the reporting. A copy of the document is send back to the CLD and the CBO (the women community base organization) who will then share that information with their members. This information is spread quickly and easily as CBO's have 70% of village women. Any community member can then access the information either at the CLD or in the CBO.

2.3.5 Risks from the Project and No Net Harm (VCS, 3.18, 3.19)

Risks resulting from project activities were identified during the SBIA workshop. The risks and their mitigation measures are described in the table below.

Table 2-6 Risks from the project and mitigation measures during the monitoring period.

Focal issue	Result	Potential Risk or Negative Impact	Likelihood	Magnitude	Mitigation strategy	Explanation	Mitigation during the monitoring period
Excessive exploitation	School construction and improved instruction	Poor attendance	Low	Medium	Reduce	Sensitisation and mobilisation	New boats have been used to transport children to school from villages in the area
	Improved husbandry and vaccination	Lack of veterinarians	High	Medium	Reduce	Training and recruitment of veterinarians	Establishment of agricultural villages with livestock enclosures reduces the need for repeated visits by several veterinarians, reducing this risk.
	Increased agricultural production	Lack of market access	Medium	Medium	Minimise	Diversify for consumption and market access	The MNRP has continued to work on the fish farming and

							agricultural diversification through construction of two additional fishponds, introduction of high-yield cassava varieties and support for production of vegetables (e.g. onions and tomatoes) for local use and sale. Eight passenger boats carry people and their goods to and from Inongo market, improving market access.
Unsustainable agriculture	Farm animals under good husbandry	Lack of forage or foraging areas	Low	High	Reduce	Training on forage crops and feed enhancement	Several highly nutritious plant species were planted in sectors of the livestock enclosures to feed the herbivores

	Awareness and changing farming culture	Resistance to change	Medium	High	Reduce	Awareness-raising from project, Chiefs and State	Establishment of demonstration gardens and agricultural villages and hiring trained agronomists to work with the local community helped improve their awareness of sustainable agricultural practices
Extreme poverty	High farm productivity	Lack of buyers	Low	Medium	Minimise	Broaden access to external markets	The project supported the running of 8 passenger boats to carry people and their goods to and from Inongo market thus improving access to external markets
	Agriculture intensification	Climate change and desertification	Low	Medium	Reduce	Land-use planning and zoning	The agricultural villages seprature livestock enclosures from farming areas

							thus allowing the community to freely farm near their village and prevent expansion into primary forest
	Improvement of transport infrastructure	Overcrowding	Low	Medium	Minimise	Sensitisation and respect of transport code	No mitigation action undertaken
Poor health	Well-sanitised villages	Overpopulation	Medium	Low	Do nothing	No action	No mitigation action undertaken
	New crops and diet change	Resistance to change of food	Medium	Medium	Reduce	Sensitisation for cultural shifts	Plant breeders have developed improved varieties of cassava, a staple food, that are resistant to the fungus and produce high yields on marginal soils.
	New hospitals and health facilities	Immigration into area due to better facilities	Low	Medium	Minimise	Expansion of project benefits	Mobile clinics established under the MNRP in collaboration with the Territory Health

							Commissioner helped expand health services such as vaccination with 775 patients treated and vaccination during M5
	Hospital construction	Lack of qualified personnel	Medium	High	Reduce	Training and recruitment of nurses by project and State	No mitigation action undertaken
Forest degradation	Improved livestock husbandry	Failure due to lack of enclosures	Medium	Medium	Reduce	Farmers trained and supervised	A second agricultural village with separate livestock enclosures was set up in Nkondi village during M5
	Increased incomes	Population increase and school desertion	Low	Low	Minimise	Support social organisation and provide bursaries	Nine community or school meetings were held during M5 to promote improved attitudes towards education thereby decreasing risk

							of school desertion
	Reduction of bush fires	Hunters persist and use traditional techniques	Medium	Medium	Reduce	Job creation and employment of hunters as eco- guards	No mitigation action undertaken

2.3.6 Community Costs, Risks, and Benefits (CCB V3, G3.2; CCB V2, G3.8)

The SBIA workshops were held in 2013 and 2014 with participants representing their communities and entrusted with sharing information with their villages. Community members who participated in the SBIA workshop were asked to identify potential costs, risk and benefits of the project. Multiple languages—French, Lingala and Lolia—were used to ensure the messages were understood. Since the SBIA workshop, the Local Development Committees (CLDs) in each village communicate with the communities and are made up of local community members. All new project activities and decisions are communicated through the CLDs, which are elected committees. The CLDs receive training as part of the project's regular activities.

2.3.7 Information to Stakeholder on Verification Process (VCS, 3.18.6, 3.19; CCB V3, G3.3)

The following steps were taken to ensure all stakeholders are aware of and provided a means to comment on the documents required for the public comment period:

The Project animateurs and the CLDs announced to community members the start of the public comment period at all recent community outreach meetings and encouraged them to file comments. Project animateurs will also note any verbal comments and ensure these are transcribed and registered.

All members of the public may visit the project office to review comprehensive project documentation, or receive verbal details re: the MNRP, the audit and public comment period and / or the public comment process. If requested, MNRP staff gladly assists any community members in submitting comments directly to the CCB standard via their website. All public comments received in writing are scanned and provided directly to the VVB and sent to the standard via email.

The summary of the MR has been translated into French and Lingala and posted in public places in the project area, including churches and schools. The full version of the PD and MR and their executive summaries are available on Verra's website (www.verra.org). A poster/flyer in French and Lingala will be placed in the communities announcing the verification process and providing a contact email address in addition to the executive summary.

2.3.8 Site Visit Information and Opportunities to Communicate with Auditor (VCS, 3.18.6, 3.19; CCB V3, G3.3)

A poster/announcement in French and Lingala announcing the on-site verification visit will be posted in all CLDs in the project area, including details on how to comment and communicate with the auditor.

2.3.9 Stakeholder Consultation (VCS, 3.18; CCB V3, G3.4; CCB V2, G3.8)

Stakeholder identification and consultation have been carried out throughout the project lifetime with the objective of ensuring the development, independent, and full and effective participation of the project communities. To this end, a series of meetings, workshops (including the Free, Prior and Informed Consent (FPIC) and the SBIA workshop), and interviews with community authorities were conducted. This approach ensured the greatest possible input from the communities involved in the design and implementation of the project. During the monitoring period, the ongoing consultation with the MNRP community members focused on capacity building as discussed below.

Ongoing consultation	Capacity building consultations were conducted with community members and other stakeholders in the project area through workshops and meetings to identify and address their priorities and needs. The capacity building sessions were not limited to climate change and the REDD+ issues, but they also covered a wide range of issues that ensure the success of the project, including agricultural training and technical skills to improve the livelihoods of families and the community in Mai Ndombe. All the ongoing consultation meetings, workshops and activities for the local communities in the project area were developed to maximise benefits for the Mai Ndombe community members, including women, youth and vulnerable groups. Communication takes place through word of mouth, with animateurs, village chiefs and CLDs responsible for disseminating information throughout villages.
Date(s) of stakeholder consultation	A list of meetings and workshops with stakeholders and the dates on which they were held can be found in the table below (Table 2-7).
Communication of monitored results	The monitored results from the stakeholders were communicated through the CLD, and documentation is available at the project offices.
Consultation records	Dates, participants, topics and often photos of important community meetings are available at the Mai Ndombe project offices.
Stakeholder input	During the meetings and workshops, community members were encouraged to ask questions of ERA Congo and to

	discuss the project further in traditional community-wide "palabres" (deep discussions). The outcome of the meetings and stakeholder input and feedback are outlined in the table below. (Table 2-7)
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Table 2-7 A list of meetings and workshops with stakeholders

Date	Theme	Stakeholders	Village	Comments
2/12/2022	Parity law	Women	Lokanga	'Raising awareness of the law on parity by showing that men and women have the right to equal opportunities and access to education and training, as well as the right to work together for community development. Women have agreed to take an active part in the REDD+ project (OB Base Organisations)'.
3/9/2022	Female Leadership	Female students	Mpili	'We have encouraged parity between girls and boys in terms of schooling matters and have encouraged girls to follow all branches of education in order to develop the necessary skills that will enable them to be leaders in the future. The students who are unmarried mothers have been made aware of this and have promised to do their best to continue their education.
3/15/2022	How to grow cassava for a good yield	Women	Mbwenzey	The aim was to teach the women some cassava cultivation techniques to enable them to get

				a yield. The women adopted new techniques for good cassava productivity.
4/15/2022	Importance of women in the REDD+ project	Women	Ibali	We have shown the importance of women in the fight against deforestation and climate change. Gender equality and women's empowerment are necessary factors for sustainable development. So, the women have organized themselves into structures called 'grassroots organizations' for strong participation and involvement in our REDD+ project at the village level.
5/18/2022	Revitalization and capacity building	CLD	Mpili	The CLD Mpili was restructured, two new members joined the CLD, and an update was given on the importance of REDD+ and the fight against climate change.
5/21/2022	Importance of market gardening in rural areas	Women	Totokomele	Market gardening is a real source of income, as well as benefiting the family and ensuring household food security. The women were delighted and promised to continue this activity for the well-being of their families.

5/21/2022	Revitalization and capacity building	CLD	Bosongo	A structuring and capacity-building meeting on the role and management of the CLD. Strong support from CLD members.
5/26/2022	Revitalization and capacity building	CLD	Mpongoboli	A restructuring meeting and an update for members of CLD Mpongoboli on the importance of CLD.
5/28/2022	Revitalization and capacity building	CLD	Nkundo	A meeting to update CLD members on the role and management of the CLD
6/4/2022	Capacity Building	CLD	Nganda malala	Capacity building was based on the different functions of the members within the CLD. CLD members reacted with a few questions about their understanding of certain points, such as the management of CLD finances.
6/25/2022	Importance of soybean farming for the family	Women	Bosongo	As soya is rich in protein, it helps to combat child malnutrition. The women have agreed to consider this crop for the good health of the family.
7/2/2022	Awareness	Community	Loliba	The project has raised awareness of the benefits of conservation. The community has taken on board the benefits

				of the project and has asked for teachers who are not paid by the state to be taken on.
7/6/2022	Awareness	Community	Ngongo	Awareness-raising was based on the Ngongo leaders' group on the REDD+ Project. This group was a news station and invited the project to come and start activities.
7/15/2022	Revitalization and capacity building	CLD	Lubalu	A meeting on CLD management and raising awareness of the importance of REDD+. CLD members understood the module on village-level management.
7/17/2022	Importance of livestock in rural areas	Women	Lubalu	Raising pigs and goats as a source of income and for self-consumption for the communities in order to reduce the consumption of bushmeat as a source of animal protein. The women have agreed to raise pigs and goats in village pens.
8/27/2022	Discussion on the amendments to the cahier de charges	CLD	Lobeke	The project asked the CLD to list the new needs that had arisen after the specifications had been drawn up. The CLD members listed the following needs: a communications antenna, a

				large room for State examinations, a passage house, maintenance of the Lobeke - Kesenge - Nselenge road and public lighting.
8/27/2022	Discussion on the amendments to the cahier de charges	CLD	Bokebeni	Amendment to specifications. The numerical requirements are a communications antenna, a depot for agricultural equipment and improved cuttings.
8/27/2022	Discussion on the amendments to the cahier de charges	CLD	Mpata mbalu	Amendment to specifications. The CLD's needs are the construction of a medical centre, construction of a 20-25 m bridge, construction of a market, sports facilities and road maintenance.
8/28/2022	Capacity building	CLD	Ibali	Capacity building on CLD management modules and the role of each member. The CLD members welcomed the initiative and are capable of managing the CLD well.
8/28/2022	Discussion on the amendments to the cahier de charges	CLD	Inunu	Amendment to specifications. The requirements are construction of a health centre, installation of a drinking water borehole, public lighting and sports facilities.

8/28/2022	Discussion on the amendments to the cahier de charges	CLD	Kesenge	Endorsement of specifications. The needs of the communities are: The establishment of a higher agricultural institute, public lighting, a machine for grinding cassava and maize, sports facilities, etc.
8/28/2022	Discussion on the amendments to the cahier de charges	CLD	Ibali	Amendment to specifications. CLD's needs include the construction of a school building in Ibali and Ntontokomele, and maintenance of the Ibali - Lobalu road.

2.3.10 Continued Consultation and Adaptive Management (VCS, 3.18; CCB V3, G3.4; CCB V2, G3. 8)

Consultation began in 2009 before the official project start date on a multiphase approach which includes communication of important project information to ensure full involvement of stakeholders to the project design and implementation and address grievances in the channeled process and most importantly addresses their concerns regarding the projects impact to their activities and livelihood. This process is a permanent one and lasts throughout the project's lifetime.

The company has been providing information and education to the community and maintained direct and constant communication with local community members and CLDs. Two main workshops on Education, Information and Communication were previously organized in the Groupements of Ntomba-Nzale and Lokanga, following the successful installation of their Local Development Committees. During these workshops, community members were provided information regarding REDD+ projects and programs and their rights pertaining thereof and the grievance policy. This has improved local knowledge and skills with respect to participatory, democratic decision-making and management-oriented processes related to community development.

The company previously hired and trained two local community members to serve as permanent community trainers (local facilitators) in addition to eight local agronomists (Table 2-8) helping the community to intensify agriculture and produce sustainable agriculture. A total of 25 local facilitators and 29 local agronomists (Table 2-9) are working in each village in the Ntomba-Nzale and Lokanga Groupements to raise awareness about conservation and support community members to conserve biodiversity and improve agriculture. Short- and medium-term impacts stemming from this increase in knowledge and skills include the capacity of communities to respond collectively and locally to community issues and increased local capacity for governance, administration and problem-solving. Ultimately, as these skills are developed, assisted, and improved, the long-term impact will be an improvement in community well-being, especially with improved agricultural production.

As referenced in the CCB monitoring plan, the project uses CLD consultations and results from monitoring to adaptively manage the project, and additional communities' needs and inputs. Examples during the monitoring period include mpox treatment, vaccines, and wells and fish ponds.

Table 2-8. Eight local agronomists and 2 local facilitators for the M5 monitoring period.

Local Agronomists

No.	Agent	Sex	Function	Place of work
1	Wanza Bosabo Fiston	M	Local Agronomist	Ngongo
2	Boongo Lionzo Freddy	M	Local Agronomist	Ngongo
3	Mpia Nsampela	M	Local Agronomist	Ngongo
4	Ebengo Nzali	M	Local Agronomist	Ngongo
5	Ebeke Kutumba	M	Local Agronomist	Ngongo
6	Ebengo Mpiokolo	M	Local Agronomist	Ngongo
7	Nziboso	M	Local Agronomist	Mpili
8	Bokelo	M	Local Agronomist	Ngongo
Local Animators				
1	Mbwangemba	M	Local Animator	Mbwenzey
2	Bokelo Baloki	M	Local Animator	Mbwenzey

Table 2-9. List of ERA Congo/WWC agronomists and local animateurs

Local Agronomists					
No.	Agent	Sex	Function	Place of work	Groupement
1	Botundu	M	Local Agronomist	Lobeke	Ntomb'e Nzale
2	Iyolo Bokwako	M	Local Agronomist	Mpongoboli	Ntomb'e Nzale
3	Bakuba Ba Bokole	M	Local Agronomist	Inongo	Ntomb'e Nzale
4	Bambongi Nadge	F	Local Agronomist	Inongo	Ntomb'e Nzale
5	Bile Armand	M	Local Agronomist	Bosongo	Ntomb'e Nzale
6	Bola Booto	M	Local Agronomist	Bakele	Ntomb'e Nzale
7	Bolokole décoré	M	Local Agronomist	Lokanga	Ntomb'e Nzale
8	Boongo Ikoko	M	Local Agronomist	Nsongo	Ntomb'e Nzale

9	Booto Bapoma	M	Local Agronomist	Mpongoboli	Ntomb'e Nzale
10	Ikolo Ikamba	M	Local Agronomist	Ibali	Ntomb'e Nzale
11	Isesi Babango	M	Local Agronomist	Loombe	Ntomb'e Nzale
12	Kasula Kimbese	M	Local Agronomist	Inongo	Ntomb'e Nzale
13	Lokonda Belinda	F	Local Agronomist	Inongo	Ntomb'e Nzale
14	Mbo Ilebo	M	Local Agronomist	Nselenge	Ntomb'e Nzale
15	Mbo Nsimba	F	Local Agronomist	Inongo	Ntomb'e Nzale
16	Mbo Wanga	M	Local Agronomist	Loombe	Ntomb'e Nzale
17	Mbokolo Bokolo	M	Local Agronomist	Lokanga	Lokanga
18	Mbombo Heritier	M	Local Agronomist	Inongo	Ntomb'e Nzale
19	Mpolo Bolatey	M	Local Agronomist	Nkondi	Lokanga
20	Mputu Ikoso	M	Local Agronomist	Bosongo	Ntomb'e Nzale
21	Mputu Luete	M	Local Agronomist	Nkondi	Lokanga
22	Ngeli Wampe	M	Local Agronomist	Nselenge	Ntomb'e Nzale
23	Ngoli Bapoma	M	Local Agronomist	Mpatambalu	Ntomb'e Nzale
24	Ngolo Nsongo Mavuba	M	Local Agronomist	Mbale	Lokanga
25	Nkatu Nkoy	M	Local Agronomist	Kesenge	Ntomb'e Nzale
26	Nswala Kims	M	Local Agronomist	Inongo	Ntomb'e Nzale
27	Nziba Malia	M	Local Agronomist	Mpatambalu	Ntomb'e Nzale
28	Wisomi Biembula Ezebio	M	Local Agronomist	Inongo	Ntomb'e Nzale
29	Yemavula Bokonga Pauline	F	Local Agronomist	Kesenge	Ntomb'e Nzale
Local Animators					
No.	Agent	Sex	Function	Place of work	Groupe ment

1	Bebeko mpeti	M	Local Animator	Île	Ntomb'e Nzale
2	Belanga Engola Apho	M	Local Animator	Mpatambalu	Ntomb'e Nzale
3	Bile Nkumu	M	Local Animator	Nselenge	Ntomb'e Nzale
4	Boipia Lobota	M	Local Animator	Mbale	Ntomb'e Nzale
5	Bokaliali	M	Local Animator	Kesenge	Ntomb'e Nzale
6	Bombambe Bakongo	M	Local Animator	Nsongo	Lokanga
7	Botikali Wanzondo	M	Local Animator	Île	Ntomb'e Nzale
8	Ilonga Bieleli Patrick	M	Local Animator	Lobalu	Ntomb'e Nzale
9	Isesi Mpoto Antoine	M	Local Animator	Loombe	Ntomb'e Nzale
10	Isomi Botuli Belong	M	Local Animator	Lokanga	Lokanga
11	Iyoto Mombebanga Fidel	M	Local Animator	Lobeke	Ntomb'e Nzale
12	Lokonda Ilako Judith	F	Local Animator	Bakele	Ntomb'e Nzale
13	Mboba Erasmus	M	Local Animator	Lobalu	Ntomb'e Nzale
14	Mboliasa Mpeti Jeanette	F	Local Animator	Nsongo	Ntomb'e Nzale
15	Mbombiongo Rossé	M	Local Animator	Lobeke	Ntomb'e Nzale
16	Mboyu Ngolu	M	Local Animator	Bakele	Ntomb'e Nzale
17	Mpeti Bolapoma Freddy	M	Local Animator	Kesenge	Ntomb'e Nzale
18	Mputu Ibanga	M	Local Animator	Nselenge	Ntomb'e Nzale
19	Mputu Lobali	F	Local Animator	Nselenge	Ntomb'e Nzale
20	Mputu Mwilondo	M	Local Animator	Nselenge	Ntomb'e Nzale
21	Ngolo Max	M	Local Animator	Mbale	Lokanga
22	Nkosango Nkanda	M	Local Animator	Ibali	Ntomb'e Nzale
23	Nkosango Théophile	M	Local Animator	Mbale	Lokanga
24	Nyimi Nkanda Jean Pierre	M	Local Animator	Ibali	Ntomb'e Nzale

25	Weye ikoso	M	Local Animator	Bosongo	Ntomb'e Nzale
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During the M5 monitoring period, the following activities took place:

- Aquaculture
- Beekeeping
- Agriculture
- Construction
- Corporate training
- Cassava production
- Sheep and goat farming
- School construction
- Pond construction
- Administrative and logistics
- Biomass monitoring
- Biodiversity monitoring
- Community engagement
- Mobile clinic
- Water drilling
- Financial and logistical support for concession schools

The aim of the public comment period is to allow primary stakeholders to voice their opinion of the MNRP, including any grievances or concerns. The following steps were taken to ensure all stakeholders are aware of and provided a means to comment on the documents required for the public comment period:

- Notices announcing the dates of the auditors' visit, their names and contact information were posted in English, French and Lingala at the project office in Inongo, and at the CLDs within the villages.
- The Project animateurs and the CLDs announced to community members the start of the public comment period at all recent community outreach meetings and encouraged them to file

comments. Project animateurs also note any verbal comments and ensure these are transcribed and registered.

- All members of the public may visit the project office to review comprehensive project documentation, or receive verbal details re: the MNRP, the audit and public comment period and / or the public comment process. If requested, MNRP staff gladly assists any community members in submitting comments directly to the CCB standard via their website. All public comments received in writing are scanned and provided directly to the VVB and sent to the standard via email.

Summary of comments received	Actions taken
Communities want the project to build schools and clinics in villages where they have not yet been built.	Communities have been informed of the current plans for the construction of schools and clinics. Their input and needs are taken into consideration when planning the next construction projects.
M5 Public comment period: question about buffer pool	Provided explanation of determination of the non-permanence risk rating in accordance with the Verra Non-Permanence Risk Tool.
M5 Public comment period: issues previously reported in Rainforest Foundation UK (RFUK Report) in December 2020.	Provided response to public comment with explanation of WWC's previous public response to RFUK Report.

2.3.11 Stakeholder Consultation Channels (CCB V3, G3.5)

As described above in section 2.3.10, the MNRP uses the CLDs as the main stakeholder consultation channels. CLDs convey all forms of project-related information to the communities through community meetings. During the community meetings, minutes are prepared by a community member and read to each participant, who signs the document to indicate that they agree with the report. A copy of the document is sent back to the CLD and the CBO (women's community-based organization) who then share this information with their members. This information is spread quickly and easily because the CBOs have 70% of the women in the village. Any community member can then access the information either at the CLD or at the CBO.

During this monitoring period, eight CLDs were elected and trained.

2.3.12 Stakeholder Participation in Decision-Making and Implementation (VCS, 3.18, 3.19; CCB V3, G3.6)

The Mai Ndombe community has been involved in decision-making throughout the project's activities, as demonstrated by their direct participation and representation in the implementation of REDD+ strategies. Meetings and workshops in the area were planned and advertised in advance with community leaders to ensure effective participation of CLDs in the MNRP. Notifications were sent via email, WhatsApp and phone calls, as well as through REDD+ posters in strategic locations. Women and youth were encouraged to participate in project design and decision-making. Women's active participation in meetings was encouraged with the aim of empowering them to lead.

2.3.13 Anti-Discrimination Assurance (VCS, 3.19; CCB V3, G3.7)

Wildlife Works and ERA Congo provided fair treatment and equal opportunities to all project stakeholders, as outlined in the internal rules of the Mai Ndombe community and job vacancy terms of reference. The Project and its associated agents will not discriminate against any individual based on factors such as gender, religion, nationality, tribe, or sexual identity.

A safe workplace and programs free from sexual harassment or unwanted advances were also ensured. There is a clear policy outlining the mechanism for petitions, complaints, claims, and suggestions to provide all employees, stakeholders, community members, and project participants with a framework to report any discriminatory actions or sexual harassment.

2.3.14 Grievances (VCS, 3.18.4; CCB V3, G3.8; CCB V2, G3.10)

The MNRP has an open-door policy toward grievances related to project operation and activities. We maintain a close link with stakeholders by working actively with each and every community on a daily basis. The MNRP also offers the same policy for staff wishing to talk about issues they may be facing.

The project enacted a grievance redress procedure at validation that is designed to address grievances between stakeholders and WWC / ERA-Congo, the MNRP project proponent. The procedure provides an accessible, fair and efficient mechanism for resolving complaints and grievances, and ensuring that the process is transparent and comprehensive. The grievance redress document was provided to community members upon establishment of the CLDs. It was translated in Lingala, the local mother tongue and publicized (available at the CLDs and the project office in Inongo) to ensure accessibility for all community members. Public meetings have been organized at the CLDs to ensure broad distribution. Two types of issues are addressed in the grievance redress procedure:

- Grievances or complaints between communities in the MNRP project zone and the project proponent, WWC / ERA Congo
- Concerns regarding worker rights, work practices, and worker safety raised by WWC/ERA Congo employees or contractors

The detailed process for dealing with grievances and complaints is also comprehensively described in the CCB PDD (pg. 84). The project has received fewer complaints in the last three years as a result of better organization as we have deployed local animateurs and agronomists in every village to solve such issues. However, most grievances were related to human-biodiversity conflict in villages.

The complaints and grievances received during this monitoring period (M5) were recorded and handled following our policy.

Grievances received	Resolution and outcome
Complaints against elephants (9 complaints in 2022 alone) mostly from the villages of Ilee, Ngeleko, Olingi Oye, Bosoli, Ntandenyanga and farm Bengé. There was only one complaint against the Bonobo's or pygmy chimpanzees in 2022.	Meetings were organized with these community members to evaluate the amount of damage to plantations. Money was paid to these community members to resolve the conflict (Complaints_aigainst_Elephants_Bonobo_2022.pdf).
Complaints against Hippopotamus (6 complaints in 2024)	All these complaints were addressed directly by victims to the Director of ERA-Congo/Wildlife Works. These complaints were then directed to the Biodiversity Department. An evaluation has been made and payment has been made to plaintiffs.

2.3.15 Worker Training (VCS, 3.19; CCB V3, G3.9; CCB V2, G4.3)

MRR.81 Documentation of training for field crews.

During the current monitoring period, the following trainings were held, and 24 people were retained as employees (see below). We maintain local capacity after our community training through continued access to training and practice.

Infrastructure:

- 02 May 2022, Inongo: (10 metal-workers) 4 retained
- 13 May 2022, Inongo: (6 carpenters) 1 retained
- 05 June 2022, Inongo: (7 brick-makers) 3 retained

Agricultural intensification:

- 12 March 2022 (Ngongo): 14 community members) 7 retained
- 05 July 2022 (Mpili: 5 community agronomists) 1 retained

Biomass:

- 18 March 2022 (22 people trained) 4 retained

Biodiversity:

- 21 June 2022 (5 community members) 2 retained

Training for all services is given in two phases, the first of which is theoretical and the second is field practice. The particularity lies in the periodicity of each service.

- Biodiversity: in the first quarter of the year
- Biomass: twice a year
- Agricultural intensification: at the beginning of each growing season
- Infrastructure: at the beginning of each new project

Community and employee education and capacity building related to payment for ecosystem services, climate change, the carbon offset industry, measurements, and monitoring is on-going and continues in the form of meetings, workshops, and open discussion (Table 2-10). Training mentioned in this section will therefore continue to benefit existing and future employees in the form of training for trainers. Newly hired animateurs and foresters are provided training and orientation by current experienced employees in the same field during their initial employment periods. The MNRP maintains SOPs and work plans for all project activities which serve to guide training for new employees. They are modified as management practices and activities are adapted. Initial carbon inventory was administered by Jeremy Freund, WWC's VP Carbon Development and Jean-Robert B. Bwangoy-Bankanza, WWC's DRC Country manager and ERA Congo's Administrateur Gérant (Managing Director) for the MNRP. The MNRP maintains ongoing collaboration with universities for forester training. Training in forest inventory methods relating to remote sensing and Geographic Information System (GIS) was provided to the foresters by the East Lansing (Michigan State University), South Dakota State University, and the University of Kinshasa department of agronomy.

Table 2-10 Project training activities

N°	Date	Activities	Training
1	03/15/2018-03/17/2018	Biodiversity	Training on elephant monitoring in the forest
2	06/20/2019-06/23/2019	Biodiversity	Training on large mammal data collection

3	1/29/2019-02/03/2019	Community Engagement	Training on the preparation of the local development plan
4	03/14/2019-03/18/2019	Community Engagement	Conflict Resolution Training
5	11/03/2020-11/06/2020	Community Engagement	Training on the Establishment of the LOKANGA Grouping Committee
6	11/26/2020-11/30/2020	Community Engagement	Training on the Establishment of the NTOMBENZALE Grouping Committee
7	03/01/20	Community Engagement	Training on participatory mapping
8	02/09/2017-09/26/2017	Biomass Monitoring	Training on the process of carbon inventory
9	1/15/2018- 04/30/2018	Biomass Monitoring	Training on forest botany and navigation
10	03/03/2019-06/24/2019	Biomass Monitoring	Training on forest botany; and taking measurements of trees
11	07/27/2019- 12/20/2019	Biomass Monitoring	Training on the use of GPS and chaining
12	1/12/2020-4/12/2020	Biomass Monitoring	Training on stratification and forest types
13	10/28/2020 - 11/17/2020	Fish Farming	The main parts of a pond
14	11/1/2020 -11/3/2020	Fish Farming	Establishment of the pond
15	11/4/2020-11/12/2020	Fish Farming	Pond construction training
16	11/12/2020-11/16/2020	Fish Farming	Fertilization and fish feed training
17	April 2018, April 2020, June 2020	Beekeeping	Beekeeping training
18	August 2017, June 2018, October 2018	Agriculture	Training on maintaining a vegetable garden
19	April 2019, June 2019, February 2020, October 2020,	Agriculture	New agricultural techniques

	November 2020, March 2021, September 2021		
20	11/16/2019	General	Chikwangue making training
21	02/20/2020-2/22/2020	General	Training on women empowerment
22	02/28/2020-02/28/2020	General	Training on valuing cassava cultivation
23	3/8/2020	General	Women leadership training
24	3/12/2020	General	Training on the importance of a management committee
25	11/12/2020	General	Nutrition training
26	10/28/2017-10/29/2017	Construction	Masonry
27	03/02/2018-03/18/2018	Construction	Reinforcement
28	05/11/2019-05/21/2019	Construction	Carpentry
29	02/15/2020 -2/23/2020	Construction	Woodworking
30	September 2017, August 2020	Administration and Logistics	Sewing and cutting training
31	9/1/2017	Administration and Logistics	Human resources training
32	September 2017, March 2019, August 2020	Administration and Logistics	Driving
33	August 2020-December 2020	Administration and Logistics	Computer training
34	August 2019-current	Corporate	Doctoral training in Remote Sensing in the United States
35	August, October and December 2022	Construction	Brickmaking
36	March and December 2022	Agriculture	Agricultural intensification
37	March and November 2022	Biomass monitoring	Biomass monitoring training

2.3.16 Community Employment Opportunities (VCS, 3.19.13; CCB V3, G3.10; CCB V2, G4.4)

As detailed in the CCB PDD, the MNRP is committed to hiring employees based on the principle of equal opportunity regardless of gender, race or religious belief. According to Social Chapter of the conservation concession contract known in French as “Cahier de Charge”, for candidates with equal qualification, experience and test scores, preference has to be given to local candidates. In accordance with these requirements the Project has been hiring local people whenever possible for all levels of unskilled, technical, and management positions.

2.3.17 Occupational Safety Assessment (VCS, 3.19; CCB V3, G3.12; CCB V2, G4.6)

The MNRP ensures that workers’ health and safety are protected to the best of its extent and across all sites. Risks are identified, mitigation strategies produced and appropriate measures adopted to minimize risks.

Given the nature of the MNRP and its geographical surroundings, it is recognized that certain occupations inherently present a risk to the health and safety of workers, particularly those that require spending long periods in relatively remote and rugged areas. These include foresters and biomass sampling teams, local researchers and community relations officers (animateurs), who may be faced with challenging terrain as well as the risk of encountering wild animals or people involved in illegal activities such as poaching, wood cutting or illicit cultivation who could pose a risk to their safety. In addition, forest fires may also pose a safety risk if they spread rapidly and unexpectedly.

The MNRP has created a comprehensive Health and Safety Plan that ensures that all workers’ health and safety is protected to the extent possible, and that all workers are fully informed about workplace risks and safe practices to mitigate those risks. These include training in safe working practices, first aid training for appropriate staff members as well as the enforcement of requirements for safe handling of equipment and other materials. This Health and Safety Plan additionally provides a comprehensive list of the measures that will be taken to inform employees of their rights, to assign roles and responsibilities to supervisors and workers and provide a safe workplace culture. The Worker Health and Safety Plan has been shared with the VVB.

This document is revisited regularly and adaptively managed as needed to ensure that it contains current information and includes all job categories and potential risks. The plan will be updated periodically to ensure that it covers all current positions and safety risks, and that it utilizes the most up-to-date safety best practices. A copy of the plan has been provided to the verifier and will be kept at the project office and be readily available for any consultation. In

addition, the MNRP provides detailed orientation for new employees, ensuring that in addition to their responsibilities, they are fully aware of their rights.

2.4 Management Capacity

2.4.1 Required Technical Skills (VCS, 3.19; CCB V3, G4.2; CCB V2, G4.2)

The MNRP is owned by Wildlife Works Carbon (WWC) and managed by ERA Congo, a wholly owned subsidiary of WWC. WWC is a community- and conservation-focused private organization established in 1997. It is the world's leading REDD+ project development and management company, with an effective approach to applying innovative market-based solutions to the conservation of forest and biodiversity. WWC's headquarters are in Mill Valley, California, but its operations are focused in Africa, Asia and Latin America. In 2011, WWC's Kasigau Corridor REDD+ Project became the world's first dual VCS & CCB validated and verified project. WWC followed this in 2012 with the validation and verification of the MNRP in the Democratic Republic of the Congo, another first of its kind. Wildlife Works Carbon has two decades of experience in operating successful conservation projects in East and Central Africa.

The principal management team for the MNRP is comprised of both members of WWC's headquarters staff, staff from the Kinshasa office that manage project finances and administration and the MNRP local staff who manage project operations and all other activity on the ground. Most of the employees in these offices, including most of the principal management, have been involved in the MNRP since its initial development. This has served to maintain the large amount of technical, geopolitical and socio-economic skill and expertise needed to implement and operate the MNRP. The MNRP additionally maintains robust SOPs and monitoring plans that provide detailed instruction for carbon accounting, community and biodiversity assessment. New and existing employees receive training on these SOPs and monitoring plans, ensuring that they are implemented properly and consistently.

There are no other entities involved in the development or implementation of the Mai Ndombe REDD+ Project.

2.4.2 Management Team Experience (VCS, 3.19; CCB V3, G4.2; CCB V2, G4.2)

Mr. Jeremy Freund, Chief Technology Officer, Wildlife Works Carbon

Mr. Jeremy Freund is a global leader in the development of REDD+ projects and programs with over 10 years of experience in international conservation. He is a co-author of the VCS VM0009 methodology, one of the first and most widely used VCS REDD+ methodologies. He has represented Wildlife Works in most validations and verifications under the VCS and CCB standards and will lead the monitoring, reporting, and verification efforts of the NRP. Mr. Freund holds a BSc in Aerospace Engineering from the University of Colorado Boulder and an

MSc in Geography from the University of California, Santa Barbara where he focused on remote sensing for agriculture and food security.

Mr. Simon Bird, Director of Forest Sciences, Wildlife Works Carbon

Mr. Simon Bird has worked in the forest ecology and environmental conservation sector for over 10 years. He has a BSc in Environmental Science and an MSc in Soil Science from the University of Vermont. Currently, he works in the Carbon Development department at the Wildlife Works Carbon office in Burlington, Vermont, supporting the development of REDD+ projects, including their validation and verification, as well as their monitoring, reporting and verification. His tasks include overseeing biomass sampling methods and protocols, forest modelling, technical writing, and reporting for VCS and CCB standards. In addition, he has participated in the review process of the VCS REDD+ VM0009 methodology.

Mr. Dodo Ndonda, Technical Director, ERA Congo/Wildlife Works Carbon

Mr. Dodo Ndonda has more than 20 years of experience in the field of Geographical Information Systems and Remote Sensing. He holds a degree in Agricultural Engineering in Natural Resource Management from the University of Kinshasa. Since 2010, he has been working as Technical Director at ERA Congo, a subsidiary of Wildlife Works Carbon. He coordinates and supervises project activities such as forest biomass and biodiversity inventories, mapping and remote sensing, and agricultural intensification during project validation and verification.

Mr. Panest Ngubidi, Senior Forestry Engineer, ERA Congo/Wildlife Works Carbon

Mr. Panest Ngubidi has been a Water and Forest Engineer at the Institute of Agricultural Sciences of Bengamisa (ISEA Bengamisa) since 1993. He has more than 20 years of experience in forest inventory. He is currently working with ERA Congo/WWC as a Senior Forest Engineer in charge of Biomass Inventories.

Mr. Djems Mbalaka Iyeli, Senior Forestry Engineer, ERA Congo/Wildlife Works Carbon

Mr. Djems Mbalaka Iyeli is an Agricultural Engineer (Plant Science) from the Yangambi Faculty Institute of Agricultural Sciences (IFA Yangambi). He has over 20 years' experience in forest inventory. He is currently working as a Senior Forest Engineer at ERA Congo/WWC in charge of Biomass Inventories.

Mr. Mathieu Bolaa Bokamba, Head of Biodiversity, ERA Congo/Wildlife Works Carbon

Mr. Matthieu Bolaa is a biologist by training, with a degree from the University of Kinshasa. He has proven experience in ecological monitoring, particularly the biomonitoring of large mammals, deployment of camera traps, and assessment of human activities in forests. He has been working at ERA Congo/WWC as a biodiversity officer since 2012.

Mr. Evariste Biembe Loliki, Community and Socio-Economic Engagement Coordinator, ERA Congo/Wildlife Works Carbon

Mr. Evariste Biembe has been working for more than 10 years in the process of involvement, participation and collaboration with local communities and indigenous peoples in socio-economic development activities. He is currently the Community and Socio-Economic Engagement Coordinator at ERA Congo/WWC. He holds a degree in Biology from the National Pedagogical University (UPN).

Ms. Marilyn Elembe Mwako, Senior Facilitator and Community Development Specialist, ERA Congo/Wildlife Works Carbon

Marilyn Elembe holds a degree in Economic and Social Law from the University of Kinshasa. She has been involved in community development and women's empowerment activities for over 15 years. She has been working as a Senior Facilitator and Community Development Specialist with ERA Congo/WWC since 2012.

Mr. Anatole Bokolo, Head of Mapping and Database Management, ERA Congo/Wildlife Works Carbon

Mr. Anatole Bokolo holds a degree in Cell Biology from the University of Kisangani. He has extensive experience in biomass and biodiversity database management and geographical information systems. Since 2012, he has been in charge of mapping and database management for the Mai Ndombe REDD+ project.

2.4.3 Project Management Partnerships/Team Development (VCS, 3.19; ; CCB V3, G4.2; CCB V2, G4.2)

There are no partnering organizations for this project, and no gaps were identified in the relevant experience of the project team.

2.4.4 Financial Health of Implementing Organization(s) (CCB V3, G4.3; CCB V2, G4.7)

Wildlife Works Carbon LLC. is a Delaware registered Limited Liability Corporation in good standing, majority owned by Wildlife Works, Inc. and Michael A. Korchinsky.

Wildlife Works, Inc. is a US registered corporation and, as such, is governed by the corporation laws of California which ensure that, at all times, the company remains financially solvent and able to meet its liabilities.

The company is owned by independent shareholders of good standing and has a Board of Directors of four (4) members. WWC is sufficiently capitalized through the sale of carbon credits and investment to ensure completion of the Project. Wildlife Works Carbon LLC has also received several high-profile investments from international corporations who support Wildlife Works' mission and believe wholly in its cause.

All project financial information is held at WWC Kinshasa, DRC office. Documents supporting these assertions are available for the VVB to analyze at their request.

2.4.5 Avoidance of Corruption and Other Unethical Behavior (VCS, 3.19; CCB V3, G4.3; CCB V2, G4.7)

WWC maintains an anti-corruption and anti-bribery policy that is updated as required but at a minimum reviewed annually. Each year, senior staff are reminded of the policy during management training and asked to reaffirm their commitment to this policy. WWC requires all project stakeholders to adhere these policies as well, both contractually where appropriate and where possible. Staff and stakeholders must also adhere to these policies operationally; for example, hiring practices reflect these policies by requiring job descriptions with minimum qualifications to be posted prior to hiring. In addition, all WWC companies go through a third-party financial audit annually once projects begin to sell carbon credits.

2.4.6 Commercially Sensitive Information (VCS, 3.5.2-3.5.4; CCB Program Rules, 3.5.13 – 3.5.14)

Some information needed to comply with VCS and/or CCB standards is of a confidential or sensitive nature and cannot be disclosed publicly by the Proponents. This information has been provided to the VVB as Annexes to this PD document but will not be included in the public version. The Project Proponents have made every effort to provide the maximum amount of information to the public. All required data will be provided to the validator but cannot be shared publicly.

2.5 Legal Status and Property Rights

2.5.1 National and Local Laws (VCS, 3.1, 3.6, 3.7, 3.14, 3.18, 3.19; CCB, CCB V3, G5.6; CCB V2, G5.1)

The MNRP complies with all applicable local, district, and national laws, regulations, and standards. Within the Project Area, none of the project activities violates any law. The DRC government owns the land in the Project Area and has granted permission to the project through award of the conservation concession. ERA Congo, a subsidiary of WWC, legally owns the rights to the sequestered carbon in the Project Area.

Laws Regulating the Forest Conservation Concession Contract and the Lac Mai Ndombe REDD+ Project

The Land Tenure Act (Law No. 73-021 of 20 July 1973 on the general property regime, the land and property regime and the system of securities, as amended and supplemented by Law No. 80-008 of 18 July 1980)).

Forest Code (Law n° 011/2002, August 29, 2002) and its related implementation decree, Decree n° 11/27, May 20, 2011, concerning specific rules on the allocation of forestry conservation concessions, determine the legal framework under which the forest conservation concession contract was allocated to ERA Congo.

Forest Code and its related Ministerial Order n° 024/CAB/MIN/ECN-T/15/JEB/08, August 7, 2008, establishing a procedure for public enquiry prior to the granting of forest concessions. This procedure was followed by ERA Congo prior to the signature of the forest conservation concession contract.

Ministerial Order n° 004/CAB/MIN/ECN-T/012 February 15, 2012, establishing an approval procedure for REDD+ projects. This procedure didn't apply at the time the MNRP was approved (see above). Nevertheless, some of these new dispositions apply to the project (Art. 21), such as:

- Register the REDD+ project to the DRC National REDD+ Registry (the MNRP is registered).
- Notify the Registry of carbon transactions that have taken place under a standard recognized by the DRC and submit PD and validation/verification reports on time.
- Submit a yearly progress report with audited financial statement at the latest by March 31 the year following the concerned financial year.

The Forest Code and its related Inter-Ministerial Order n° 006/CAB/MIN/ECN-EF/2007 and n° 004/CAB/MIN/FINANCES/2007 establishes the area tax and amount to be paid by forestry concession holders yearly.

Corporate Laws

Loi n° 10/008 February 27, 2010 modifying and supplementing the King Decree February 27, 1887, relative to commercial corporations and law **Loi n° 10/009, February 27, 2010**, modifying and supplementing the March 6, 1951, decree establishing a commercial and companies register. ERA Congo is registered to the new commercial and companies register under the registered number KM3087M.

Investments Code Loi n° 004/2002 of February 21, 2002, establishes the legal and taxation framework for foreign investment in the DRC. It allows some tax exemptions to ERA Congo.

Labor Laws

Employment law “Loi n° 015/2002” and its related Ministerial Decree n° 070/0016, August 11, 1970, on working conditions; Ministerial Decree n° 68/13, May 1968, relative to women's wages and working conditions; Ministerial Order n° 12/CABMIN/TPS/AR/KF/059/02, September 27, 2002, determining implementing measures of Ministerial Order n° 080/2002 July 3, 2002, establishing a minimum wage; and Ministerial Order n° 12/CAB.MIN/116/2005,

October 26, 2005, relating to employee dismissal procedures. ERA Congo has adopted an internal employment conditions regulation in conformity with these labor regulations.

National Security Law Loi n° 75/028 September 19, 1975, modifying Decree-Law of June 29, 1961, establishing the National Social Security Institute (INSS), covering employee pensions, occupational risks and accidents, and family allowances. Benefiting the members (employees/employers), it is a compulsory savings scheme into which the employer pays a statutory contribution for every employee who is a member. ERA Congo is being registered to the INSS.

Health Benefits Decree-Law 67/310 August 9, 1965, states that companies have to cover health care needs of their employees. This obligation is reflected in the internal employment regulation (Art. 51) of ERA Congo.

Local Laws

The 2006 Constitution of the Democratic Republic of the Congo provides for the decentralization of powers from the central government to provinces, and forests rights are to be shared between the central government and the provinces (Art. 201).

Ministerial Decree n° 11/27, May 20, 2011, concerning specific rules on the allocation of Forestry Conservation Concession (Art. 7) requires that the request be submitted to the provincial governor. Though not in force at the time of ERA's request, ERA Congo obtained an approval from the provincial governor and local authorities. This authority is given with the signing of the forest conservation concession contract terms of reference (cahier de charges) between the province, district, local communities, and ERA Congo on March 26, 2011.

Ministerial Decree n° 033 October 2, 2006, concerning cadaster functioning and organization (Art. 2), requests that a copy of the concession contract be sent to the provincial cadaster. Two copies were sent by ERA Congo.

International Agreements

Article 215 of the 2006 Democratic Republic of Congo Constitution, February 18, 2006, states: "Treaties and international agreements have regularly reached, from their publication, an authority superior to that of laws, provided for each treaty or agreement its implementation by other party."

DRC is party to the United Nations Convention on Biological Diversity since December 3, 1994, and signed its two related Cartagena and Nagoya Protocols on June 6, 2012, and September 9, 2011, respectively; party to the United Nations Framework Convention on Climate Change on January 9, 1995, and its related Kyoto Protocol March 23, 2005; to the Ramsar Convention on Wetlands on May 18, 1996, and party to the Treaty on the Conservation and Sustainable Management of Forest Ecosystems in Central Africa and to Establish the Central Africa Forest Commission (COMIFAC) on January 24, 2005.

The MNRP aims to assist the DRC with attaining its objectives in terms of climate change; the conservation of biodiversity, fauna, flora, and wetlands; and sustainable use of forest ecosystems. MNRP is within an area listed on September 9, 2008, as wetlands of international importance under the Ramsar Convention (also see Section G1.8).

Legal Agreements

The Carbon Rights Agreement was signed on March 14, 2011, between Wildlife Works Carbon LLC and the DRC government by its representative, the Minister of Environment, Conservation of Nature, and Tourism (MECNT). This agreement transfers the carbon rights to WWC / ERA Congo and states the roles and obligations of the two parties to that agreement, the project time-period, revenue sharing with the government, payments to communities (benefit sharing), and taxes to be paid by WWC / ERA Congo to the government. In this case only, the area tax is to be paid; WWC / ERA Congo is exempt from other taxes established by the Forestry Code.

The forest conservation concession contract was signed on July 30, 2011, by ERA Congo and MECNT representatives, which allocates the conceded lands to ERA Congo and defines ERA Congo's social, environmental, and management obligations.

2.5.2 Relevant Laws and Regulations Related to Worker's Rights (VCS, 3.18, 3.19; CCB V3, G3.11; CCB V2, G4.5)

All employee rights and employer regulations and responsibilities in the DRC are covered by the "Code du Travail", the Labor Law. In keeping with the Code du Travail, the MNRP has developed and received government approval for its own internal employee policy. This policy has been distributed among all employees and is presented and explained to prospective employees. All documents concerning the adherence to the above two policies are on file at the ERA offices in DRC.

2.5.3 Human Rights (VCS, 3.19)

The MNRP has the responsibility and commitment to recognize and respect the rights of the communities residing in the project area. While DRC has not ratified the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169 on Indigenous and Tribal Peoples, there are laws in place to ensure the protection of the rights of the local community. DRC has signed and/or ratified international human rights treaties, including the International Covenant on Economic, Social and Cultural Rights, International Covenant on Civil and Political Rights, and the Convention on the Elimination of All Forms of Discrimination against Women.

The MNRP is committed to recognizing, respecting, and promoting all the applicable laws and treaties during the implementation. In line with this, the project developed a FPIC process and conducted SBIA workshops as well as CLD meetings through the lifetime of the project, which guarantee the full and effective participation of the community in Mai Ndombe (including

vulnerable populations) during the development and implementation of project activities. These processes ensured that the project respected the rights and heritage of the population. All communication regarding the project and its related activities was in the appropriate language to ensure the community understood and could respond to any concerns.

2.5.4 Indigenous Peoples and Cultural Heritage (VCS, 3.18, 3.19)

The community in Mai Ndombe is participating in the REDD+ project to have long-term financing through the voluntary carbon market as a means of preserving the forest and ensuring continued development. The project proponents are the local communities who own forest concessions. The project activities are aligned with the cultural practices of the community and aim to improve community wellbeing and conserve the forest.

One of the project activities is to improve traditional food production systems associated with cassava production. Cassava bread is the most important food in the diet of the Mai Ndombe community. Unfortunately, cassava production is often affected by cassava root fungus, which has led to the destruction of plantations in the region. Plant breeders have worked on the development of improved cassava varieties resistant to the fungus and providing high yields in marginal soils. Through the MNRP activities, the improved cassava varieties have been made available to the local communities, and multiplication farms have been set up in Loombe and Nsongo. The community members have also requested and received the improved cassava sticks for their own farms. The project has supported this undertaking by training agronomists to guide the communities.

The MNRP also continues to respect the Local Development Committees (CLDs) in the development and implementation of project activities. The CLDs have been crucial in supporting all project activities on the ground as their membership represents the Groupments for all major decisions related to the MNRP. Through the CLDs, the project ensures that the needs and wants of the community members are known, and the cultural heritage and related practices are respected during project activities. CLDs have been instrumental in conveying all forms of project-related information to the communities during meetings throughout the lifetime of the project. MNRP supports the CLDs and their roles by enhancing their capacity through regular training.

2.5.5 Recognition of Property Rights (VCS, 3.7, 3.18, 3.19; CCB V3, G5.1; CCB V2, G1.6)

Disputes over rights to territories and resources	N/A
Respect for property rights	No involuntary relocations have ever been, nor shall ever be, carried out in association with the MNRP within the MNRP project zone, within which the project area and project accounting area are entirely located. All villages that signed

	consent agreements have been assigned a mutually-agreed-upon 2.5 km buffer that was excluded from the protected area used to calculate carbon credits (PAA). Additionally, all the secondary forest was voluntarily and conservatively removed from the protected area to provide a recognizable delineation between community use areas and intact forest (see VCS PD, Section 1.9.1). The MNRP does not practice community enforcement in any way, shape, or form. Communities are not required to halt or alter their agricultural or hunting practices, but rather informed of their right to garner income from the REDD+ Project via benefit sharing should they choose to conserve their forests and the biodiversity therein. As such, any encroachment beyond the community buffers is simply measured, and any emissions are subsequently deducted from NERs.
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2.5.6 Benefit Sharing Mechanism (VCS, 3.18, 3.19)

The project does not impact property rights as described in section 2.5.5 above. Therefore, the table for this section is not applicable.

2.5.7 Free, Prior, and Informed Consent (VCS, 3.18, 3.19; CCB V3, G5.2; CCB V2, G5.2)

Consent	The land in the project area is owned by the Government of the DRC. The project has been granted the management rights for the concessions by the Ministry of the Environment, Conservation of Nature, and Tourism (MECNT), as further described in sections G1.6, G3.8, G5.1, G5.2, and G5.6 of the CCB PDD. Communities in the project area govern resource use and access through customary laws and rights managed by local chiefs. WWC has adopted a multi phased approach to stakeholder engagement and consent which includes communication of important project information to stakeholders as it becomes available, and allows stakeholders to impact project design, air grievances, and give or withhold free prior and informed consent (FPIC) to participation in project activities. This multi phased stakeholder engagement and consent process is designed to continue throughout the project lifetime. Documented consultations are described under each phase listed below. Further details of these phases are provided in section G3.8 of the PDD. Dates, attendees, topics, and often photos of significant community meetings are available for review in the Mai Ndombe project offices.
Outcome of FPIC	Information sessions were held in each of the 23 major villages in the project area. In these meetings ERA Congo (subsidiary of WWC) was

introduced, including its history and the concept of REDD, with a discussion of global climate change. Meetings typically lasted between 2 and 6 hours and were attended by between 20 and 100 adults. Villagers were encouraged to ask questions of ERA Congo and continued to discuss the project in community wide, traditionally held, “palabres” (deep discussions). After visiting the community a few times, would introduce a consent form and encourage stakeholders to debate the merits of consenting to project development without the company present. After at least two days had elapsed, ERA returned to each village to answer further questions, continue with information sharing, and collect consent forms if they had been signed. Consent forms were signed in 100% of communities where they were proposed. Following these meetings, the Free Prior Informed Consent has been granted from the following clans:

Ipokyetoyi, Ikoli, Basanza, Mpama, Mpatambalu, Mpatambalu, Bomwanza, Kesenge, Bomwanza, Mpama, Ibali, Ionka, Botongambela, Lobalu, Boongo, Boliombale, Boondo II, Mpenge, Mbongo, Ndomandala, Basobe, Ilee, Nyatotonga, Mpototonga, Ngelibenga, Bangaya, Mpama, Kesenge, Bompengo, Bokolo II, Kundo, Bopombo.

These clans have been allocated USD \$500 annually, as customary payment, in keeping with the Cahiers de Charge signed by ERA Congo with these communities, pending credit.

2.5.8 Property Right Protection (VCS, 3.18, 3.19; CCB V3, G5.3; CCB V2, G5.4)

No involuntary relocations have ever been, nor shall ever be, carried out in association with the MNRP within the MNRP project zone, within which the project area and project accounting area are entirely located. All villages that signed consent agreements have been assigned a mutually-agreed-upon 2.5 km buffer that was excluded from the protected area used to calculate carbon credits (PAA). Additionally, all the secondary forest was voluntarily and conservatively removed from the protected area to provide a recognizable delineation between community use areas and intact forest (see VCS PD, Section 1.9.1). The MNRP does not practice community enforcement in any way, shape, or form. Communities are not required to halt or alter their agricultural or hunting practices, but rather informed of their right to garner income from the REDD+ Project via benefit sharing should they choose to conserve their forests and the biodiversity therein. As such, any encroachment beyond the community buffers is simply measured, and any emissions subsequently deducted from NERs.

2.5.9 Identification of Illegal Activity (VCS, 3.19; CCB V3, G5.4; CCB V2, G5.5)

Illegal activities related to the MNRP are defined as illegal and unauthorized logging, destruction of biodiversity (illegal killing of animals or destruction of vegetation cover) beyond the conditions permitted by law. The DRC Forest Code defines "local community forest."

Agricultural activities are permitted in this area and, therefore, deforestation or forest degradation for agriculture and/or customary activities (i.e., fuelwood for local consumption, construction wood for the village) in these areas is not illegal. These community use areas have been excluded from the project accounting area (see above) to conform with the legal definition of community forests inside of a concession.

As the local community forest boundaries are not yet defined, due to lack of a national forest management plan, the Forest Code and its related implementation decrees and rules prescribe a participatory mapping procedure to be carried out by the concession contract holder and local communities under the framework of their CLDs. The Forest Code states that "the Concession Holder has all the rights pertaining to forest use and conservation except the usage rights of the local communities." Land usage within the conservation concession area, other than for local communities and other types of concessions (such as agriculture or forestry) awarded prior to the signing of the concession contract, is not legally permitted.

Concessions granted prior to the present concession contract have therefore been subtracted from the project area. Such concessions exist in three different areas: two concessions in the Bosongo and Mbwenzey forest, one concession in the Mbale forest at Bobola Mpinga, and a 25 km² agricultural rubber plantation in the triangle between Kesenge, Mpili, and Nselenge. At Bobola Mpinga, logging activities have been happening that have supplied the project with material for school construction. In recent days, the concession holder has expressed his interest in converting his concession to a conservation concession. Hunting is illegal only during periods of hunting closure. Hunting using traditional methods is not viewed as illegal at any time as it does not significantly contribute to the depletion of animal populations.

With regard to illegal labour, the project does not use victims of human trafficking, forced labour or child labour in the project activities. The MNRP employs community members of legal age through established employment procedures to select the most suitable candidates for the roles.

2.5.10 Ongoing Disputes (VCS, 3.18, 3.19; CCB V3, G5.5; CCB V2, G1.6)

In 2022, there were 7 cases of human-elephant conflict because elephants had destroyed their crop fields.

The victims file complaints with the CCD. The CCD, through its Community Engagement Coordinator, forwards them to WWC/ERA-Congo, which, together with the Biodiversity Service, carries out a damage assessment.

The following parameters are taken into account:

- The ravaged area;
- The type of culture destroyed

- The number of feet destroyed

The final estimate is quantified in terms of lost money that the company undertakes to pay as compensation for victims.

All cases have been well resolved to the satisfaction of the victims, and no disputed cases have been recorded so far.

As for the conflict side between communities and society, nothing has been reported for the year 2022.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation (VCS, 3.16)

Data / Parameter	α
Data unit	unitless
Description	Combined effects of β and θ at the start of the historic reference period for the Project Accounting Area
Source of data	Reference area and historic reference period
Value applied	0.9488756
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit
Purpose of data	Determination of baseline scenario
Comments	

Data / Parameter	β
Data unit	unitless
Description	Effect of time on the cumulative proportion of conversion over time for the Project Accounting Area

Source of data	Reference area and historic reference period
Value applied	0.0006167
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit
Purpose of data	Determination of baseline scenario
Comments	

Data / Parameter	γ
Data unit	days
Description	Time shift from beginning of historic reference period to project start date
Source of data	Historic reference period
Value applied	-8720
Justification of choice of data or description of measurement methods and procedures applied	Time in which the logistic model is fit. The start of the historic reference period is 29 April 1987, and the Project Start Date is 13 March, 2011.
Purpose of data	Determination of baseline scenario
Comments	

Data / Parameter	θ
Data unit	unitless
Description	Effect of certain covariates on the cumulative proportion of conversion over time
Source of data	Reference area and historic reference period

Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit
Purpose of data	Determination of baseline scenario
Comments	Parameter not used

Data / Parameter	λ_{soc}
Data unit	proportion (unitless)
Description	Exponential soil carbon decay parameter
Source of data	Value from the literature. Davidson, E., and Ackerman, I. 1993. Changes in soil carbon inventories following cultivation of previously untillied soils. Biogeochemistry, 20(3), 161-193.
Value applied	0.2
Justification of choice of data or description of measurement methods and procedures applied	Default value from VCS methodology VM0009 V2.0
Purpose of data	Determination of baseline emissions
Comments	

Data / Parameter	$\hat{\sigma}_{EM}$
Data unit	standard deviation (unitless)
Description	The estimated standard deviation of the state observations used to fit the logistic function for the Project Accounting Area BEM
Source of data	Remote sensing image interpretation
Value applied	0.00892887

Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v2 and the MNRP's standard operating procedures. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline emissions.
Comments	

Data / Parameter	<i>B</i>
Data unit	set
Description	The set of all selected carbon pools in biomass. Is a subset of <i>C</i>
Source of data	PD
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline emissions.
Comments	

Data / Parameter	<i>C</i>
Data unit	set
Description	The set of all selected carbon pools
Source of data	Monitoring records
Value applied	N/A

Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Calculation of baseline emissions
Comments	

Data / Parameter	<i>J</i>
Data unit	set
Description	The set of all observations of conversion. When superscripted with a monitoring period, the conversion observations are taken for leakage analysis.
Source of data	Remote sensing image interpretation or field observations in the leakage area.
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Calculation of baseline emissions
Comments	Parameter not used

Data / Parameter	<i>M</i>
Data unit	set
Description	The set of all monitoring periods
Source of data	Monitoring records
Value applied	N/A

Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Calculation of baseline emissions
Comments	

Data / Parameter	T
Data unit	ha
Description	The set of all species/categories of livestock
Source of data	Monitoring records
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Determination of baseline emissions
Comments	Parameter not used

Data / Parameter	A_{PAA}
Data unit	ha
Description	Area of Project Accounting Area
Source of data	GIS analysis prior to sampling
Value applied	248,956
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the

	measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	A_{PX}
Data unit	ha
Description	Area of proxy area for the Project Accounting Area
Source of data	GIS analysis prior to sampling
Value applied	29,361.2
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	A_{AS}
Data unit	ha
Description	Area of the Activity-Shifting Leakage Area
Source of data	GIS analysis prior to sampling
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A

Purpose of data	Calculation of leakage.
Comments	Parameter not used, no activity-shifting leakage in project

Data / Parameter	c_{Lp}
Data unit	tCO ₂ e/ha
Description	Carbon stocks in project leakage area
Source of data	Leakage area sampling
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Calculation of baseline emissions
Comments	Parameter not used

Data / Parameter	m
Data unit	tCO ₂ e/ha
Description	Average carbon in merchantable trees cut each year as a result of legally-sanctioned commercial logging
Source of data	Timber harvest plans or measurement of carbon stocks in merchantable trees in the Project Accounting Area.
Value applied	1,106,407
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.

Purpose of data	Calculation of baseline emissions.
Comments	

Data / Parameter	n_d
Data unit	unitless
Description	Number of spatial points in the Forest Project Accounting Area reference area
Source of data	Remote sensing image interpretation
Value applied	1,572
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	o_i
Data unit	Binary (unitless)
Description	State observation for the i^{th} sample point in the Project's reference area
Source of data	Remote sensing image interpretation
Value applied	See the document BEM Export Grid PAA, available on request
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.

Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	p_{LME}
Data unit	Proportional (unitless)
Description	Portion of leakage related to market
Source of data	VCS methodology VM0009 V2.0 Section 8.3.3
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Calculation of leakage.
Comments	Parameter not used, No market leakage from the Project

Data / Parameter	q
Data unit	days
Description	N/A
Source of data	N/A
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Determination of baseline scenario
Comments	Parameter not used

Data / Parameter	r_{CFb}
Data unit	unitless
Description	Carbon fraction of biomass for burned wood or herbaceous material b
Source of data	Literature estimates or direct measurement
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	No burning of wood or herbaceous material in project
Purpose of data	Calculation of baseline emissions
Comments	Parameter not used

Data / Parameter	r_{RS}
Data unit	unitless
Description	Expansion factor for above-ground biomass to below-ground biomass (root/shoot ratio)
Source of data	IPCC Guidelines for National Greenhouse Gas Inventories, 2006, Volume 4: Agriculture, Forestry and Other Land Use, Chapter 4: Forest Land, Table 4.4
Value applied	0.37
Justification of choice of data or description of measurement methods and procedures applied	IPCC default value for Wet Tropical Forest Ecosystems.
Purpose of data	Calculation of baseline emissions.
Comments	

Data / Parameter	r_U
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Data unit	unitless
Description	Onset proportion of conversion immediately adjacent to Project Area
Source of data	GIS analysis and image interpretation
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Determination of baseline scenario.
Comments	Parameter is not used since baseline is P1

Data / Parameter	t
Data unit	days
Description	Time since Project Start Date
Source of data	Monitoring records
Value applied	4,311
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	t_i
Data unit	days

Description	The point in time of the observation made at point i
Source of data	Remote sensing image interpretation
Value applied	See file “ExportGridsCSV_DRC_CDM2.xlsx” for value for each point.
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP’s standard operating procedures. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario
Comments	

Data / Parameter	t_{PA}
Data unit	days
Description	Time prior to the Project Start Date when the primary agent began commercial logging in the Project Accounting Area.
Source of data	Harvest plans prepared for the Project Accounting Area, or by public record
Value applied	-2,901
Justification of choice of data or description of measurement methods and procedures applied	The parameter was determined by using the project start date (March 14, 2011) and the date when the primary agent began logging (April 1, 2003). Logging started in the project area well before the project start date. In a portion of the project area, commercial harvest had been performed, which commenced the cascade of degradation. The project proponent’s subsequent actions to establish project activities effectively halted emissions from secondary agents.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	t_m
Data unit	days
Description	Length of project or logging in baseline scenario
Source of data	PD
Value applied	9,125
Justification of choice of data or description of measurement methods and procedures applied	Due to the lack of available timber harvest plans from the primary agent, the removal of merchantable biomass from the project accounting area is assumed to be evenly distributed across 25 years (9125 days) of logging activities in the baseline scenario.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	t_{PL}
Data unit	days
Description	Length of project crediting period
Source of data	PD
Value applied	10,957
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	t_{PAI}
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Data unit	days
Description	Number of days after the project start date for the start of a project activity instance in a grouped project
Source of data	PD
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Determination of baseline scenario
Comments	Parameter not used

Data / Parameter	t_{SA}
Data unit	days
Description	Arrival time of secondary agents after start of commercial logging.
Source of data	Participatory rural appraisal, or expert knowledge.
Value applied	1,825
Justification of choice of data or description of measurement methods and procedures applied	The value of this parameter was determined utilizing information about the nature of commercial harvest and the behavior of secondary agents in the baseline scenario. The project proponent conducted community interviews to determine the length of time between commercial harvest and the emergence of secondary agents. This timeframe was corroborated by local community members throughout the reference area during interviews from the aforementioned visit.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	w_i
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Data unit	unitless
Description	weight applied to the i^{th} sample point in the Forest Project Accounting Area reference area
Source of data	Remote sensing image interpretation
Value applied	See the document BEM Export Grid, available upon request
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Image Classification Protocol.pdf". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	x
Data unit	unitless
Description	Covariate values
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	Should use the most accurate of the data sources if both are available
Purpose of data	Determination of baseline scenario
Comments	Parameter not used

Data / Parameter	x_i
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Data unit	geographic coordinates
Description	Latitude of the i^{th} sample point
Source of data	Remote sensing image interpretation
Value applied	See the document BEM Export Grid, available upon request
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Image Classification Protocol.pdf". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

Data / Parameter	x_{PAI}
Data unit	unitless
Description	Covariate values as of a project activity instance start date
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	Should use the most accurate of the data sources if both are available
Purpose of data	Determination of baseline scenario.
Comments	Parameter not used

Data / Parameter	x_o
Data unit	unitless

Description	Covariate values as of the project start date
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	Should use the most accurate of the data sources if both are available
Purpose of data	Determination of baseline scenario
Comments	Parameter not used

Data / Parameter	x_{SA}
Data unit	unitless
Description	Covariate values as of the arrival of the secondary agents
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of data	Determination of baseline scenario.
Comments	Parameter not used

Data / Parameter	y_i
Data unit	geographic coordinates
Description	Longitude of the i^{th} sample point
Source of data	Remote sensing image interpretation

Value applied	See the document BEM Export Grid, available upon request
Justification of choice of data or description of measurement methods and procedures applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 and the MNRP's standard operating procedures "Standard Image Classification Protocol.pdf". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Purpose of data	Determination of baseline scenario.
Comments	

3.1.2 Data and Parameters Monitored (VCS, 3.16)

3.2MRR.78 List of parameters from VCS Methodology VM0009 V2.0 Appendix H, their values and the time last measured.

MRR.79 Quality assurance and quality control measures employed for each.

MRR.80 Description of the accuracy of each.

MRR.93, MRR.94, MRR.95, MRR.96, MRR.99, MRR.100 and MRR.101 Allometric Equations.

VM0009, version 2, section 9.3.1.1 specifies how to validate allometric equations used to estimate biomass for the project. The methodology has several requirements with respect to validation of allometric equations used in monitoring. Refer to Appendix 4 for details on the allometry validation and Appendix 7 for the specific gravity values for all applicable tree species.

Data / Parameter	$w^{[m]}$
Data unit	set
Description	The set of all burned wood or herbaceous material
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	Every monitoring period

Value monitored	N/A
Monitoring equipment	N/A
QA/QC procedures to be applied	Review of monitoring records
Purpose of the data	Calculation of project emissions
Calculation method	N/A
Comments	Parameter not used

Data / Parameter	$A_{p1}^{[m=0]}$
Data unit	ha
Description	Area of Forest Project Accounting Area stratum 1 prior to first verification event – Semi-deciduous forest, Logged FORESCOM
Source of data	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6.2. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the limits of ArcGIS software and quality of the shapefiles.
Frequency of monitoring/recording	First monitoring period
Value monitored	55,244.75
Monitoring equipment	Computer with ArcGIS software
QA/QC procedures to be applied	QA/QC procedures are in line with the requirements of VM0009 v2 and the VCS standard. This includes a review of the GIS products and visual assessments of the accuracy of the shapefiles.
Purpose of the data	Calculation of baseline emissions.

Calculation method	GIS analysis
Comments	

Data / Parameter	$A_{P2}^{[m=0]}$
Data unit	ha
Description	Area of Forest Project Accounting Area stratum 2 prior to first verification event – Semi-deciduous forest, Logged SOFORMA
Source of data	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6.2. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the limits of ArcGIS software and quality of the shapefiles.
Frequency of monitoring/recording	First monitoring period
Value monitored	23,205.02
Monitoring equipment	Computer with ArcGIS software
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 and the VCS standard. This includes a review of the GIS products and visual assessments of the accuracy of the shapefiles.
Purpose of the data	Calculation of baseline emissions.
Calculation method	GIS analysis
Comments	

Data / Parameter	$A_{P3}^{[m=0]}$
Data unit	ha

Description	Area of Forest Project Accounting Area stratum 3 prior to first verification event – Semi-deciduous forest, Unlogged
Source of data	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6.2. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the limits of ArcGIS software and quality of the shapefiles.
Frequency of monitoring/recording	First monitoring period
Value monitored	49,476.66
Monitoring equipment	Computer with ArcGIS software
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 and the VCS standard. This includes a review of the GIS products and visual assessments of the accuracy of the shapefiles.
Purpose of the data	Calculation of baseline emissions.
Calculation method	GIS analysis
Comments	

Data / Parameter	$A_{P4}^{[m=0]}$
Data unit	ha
Description	Area of Forest Project Accounting Area stratum 4 prior to first verification event – Swamp Forest
Source of data	GIS analysis prior to sampling

Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 section 6.2. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the limits of ArcGIS software and quality of the shapefiles.
Frequency of monitoring/recording	First monitoring period
Value monitored	121,030.00
Monitoring equipment	N/A
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 and the VCS standard. This includes a review of the GIS products and visual assessments of the accuracy of the shapefiles.
Purpose of the data	Calculation of baseline emissions.
Calculation method	GIS analysis
Comments	

Data / Parameter	$B_b^{[m]}$
Data unit	tonnes
Description	Biomass in burned wood or herbaceous material b
Source of data	Measurements of biomass
Description of measurement methods and procedures to be applied	Scale
Frequency of monitoring/recording	Every monitoring period
Value monitored	N/A
Monitoring equipment	Equipment list in Annex 20

QA/QC procedures to be applied	Review of monitoring records
Purpose of the data	Calculation of project emissions.
Calculation method	Summation
Comments	Parameter not used, no biomass burning in Project

Data / Parameter	$c_B^{[m]}$
Data unit	tCO ₂ e/ha
Description	Baseline carbon stocks at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS methodology VM0009 v2 Section 6.4 and Appendix B.2 and the MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe – Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value monitored	100.64
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [B.31]

Comments	
Data / Parameter	$C_{B\ BGB}^{[m]}$
Data unit	tCO2e
Description	Carbon not decayed in BGB at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Section 8.1.7. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Frequency of monitoring/recording	Every monitoring period
Value monitored	-9,804,581
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.30]
Comments	

Data / Parameter	$C_{B\ DW}^{[m]}$
Data unit	tCO2e
Description	Carbon not decayed in DW at the end of the current monitoring period

Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Section 8.1.6. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Frequency of monitoring/recording	Every monitoring period
Value monitored	-308,846
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.34]
Comments	

Data / Parameter	$C_{B SOC}^{[m]}$
Data unit	tCO ₂ e
Description	Carbon not decayed in SOC at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Section 8.1.8. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022.
Frequency of monitoring/recording	Every monitoring period

Value monitored	-623,845
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.31]
Comments	

Data / Parameter	$C_{BWP}^{[m]}$
Data unit	tCO2e
Description	Carbon not decayed in wood products at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Section 8.1.13 and Appendix C. All measurements were made between 2011 and 2022.
Frequency of monitoring/recording	Every monitoring period
Value monitored	-984,168
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.

Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [C.1]
Comments	

Data / Parameter	$C_{B\ AGMT}^{[m]}$
Data unit	tCO ₂ e/ha
Description	Baseline carbon stocks in above-ground merchantable trees at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.1. All measurements were made between 2011 and 2022.
Frequency of monitoring/recording	Every time measure (≤5 yrs)
Value monitored	1.52
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Weighted per ha average
Comments	

Data / Parameter	$C_{B\ BGMT}^{[m]}$
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Data unit	tCO ₂ e/ha
Description	Baseline carbon stocks in below-ground merchantable trees at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.3. All measurements were made between 2011 and 2022.
Frequency of monitoring/recording	Every time measure (≤5 yrs)
Value monitored	0.56
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Weighted per ha average
Comments	

Data / Parameter	$C_{P\ AGMT}^{[m=0]}$
Data unit	tCO ₂ e
Description	Project carbon stocks in above-ground merchantable trees at Project Start
Source of data	Project accounting area sampling

Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.3. All measurements were made during the first monitoring period.
Frequency of monitoring/recording	First monitoring period
Value monitored	21,252,545.878
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Summation across plots
Comments	

Data / Parameter	$C_{PBGMT}^{[m=0]}$
Data unit	tCO ₂ e
Description	Project carbon stocks in below-ground merchantable trees at Project Start
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.3. All measurements were made during the first monitoring period.
Frequency of monitoring/recording	First monitoring period
Value monitored	7,863,441.97
Monitoring equipment	Equipment list in Annex 11

QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Summation across plots
Comments	

Data / Parameter	$C_{Bb}^{[m]}$
Data unit	tCO ₂ e/ha
Description	Baseline scenario average carbon stock in selected carbon pools
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.1.5 and MNRP’s “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. All measurements were from 2011 to 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Monitoring period (≤5 yrs)
Value monitored	See Annex 16 – Proxy Area Carbon Model
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.

Calculation method	Weighted per-ha average
Comments	

Data / Parameter	$C_{B\ BM}^{[m]}$
Data unit	tCO ₂ e/ha
Description	Baseline carbon stocks in biomass at the end of the current monitoring period for the Project Accounting Area
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". All measurements were from 2011 to 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Monitoring period (≤5 yrs)
Value monitored	100.64
Monitoring equipment	Equipment list in Annex 11
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.17]
Comments	

Data / Parameter	$C_{B\ SOC}^{[m]}$
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Data unit	tCO ₂ e/ha
Description	Baseline soil carbon stocks at the end of the current monitoring period for the Project Accounting Area
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.6. All measurements were from 2011 to 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Monitoring period (≤5 yrs)
Value monitored	57.0
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” This includes a review of monitoring records for errors.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.31]
Comments	

Data / Parameter	$c_p^{[m]}$
Data unit	tCO ₂ e/ha
Description	Project carbon stocks at the end of the current monitoring period for the Project Accounting Area
Source of data	Project Accounting Area sampling

Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Monitoring period (≤ 5 yrs)
Value monitored	877.61
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [B.31]
Comments	

Data / Parameter	$c_p^{[m-1]}$
Data unit	tCO ₂ e/ha
Description	Project carbon stocks at the beginning of the current monitoring period
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made

	between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	917.27
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [B.31]
Comments	

Data / Parameter	$c_p^{[m=0]}$
Data unit	tCO ₂ e/ha
Description	Project carbon stocks prior to first verification event for the Project Accounting Area
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring period

Value monitored	1,069.04
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [B.31]
Comments	

Data / Parameter	$C_{P1BM}^{[m=0]}$
Data unit	tCO2e/ha
Description	Project carbon stocks in biomass in Project Accounting Area stratum 1 at project start – Semi-deciduous forest, Logged FORESCOM
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring period
Value monitored	1,058.15
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality

	Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Average of plot measurements in a given stratum
Comments	

Data / Parameter	$C_{P2BM}^{[m=0]}$
Data unit	tCO2e/ha
Description	Project carbon stocks in biomass in Project Accounting Area stratum 2 at project start – Semi-deciduous forest, Logged SOFORMA
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring period
Value monitored	868.99
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.

Calculation method	Average of plot measurements in a given stratum
Comments	

Data / Parameter	$C_{P3BM}^{[m=0]}$
Data unit	tCO ₂ e/ha
Description	Project carbon stocks in biomass in Project Accounting Area stratum 3 at project start – Semi-deciduous forest, Unlogged
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring event
Value monitored	635.69
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Average of plot measurements in a given stratum
Comments	

Data / Parameter	$C_{P4BM}^{[m=0]}$
Data unit	tCO ₂ e/ha
Description	Project carbon stocks in biomass in Project Accounting Area stratum 4 at project start – Swamp Forest
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring event
Value monitored	895.76
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Average of plot measurements in a given stratum
Comments	

Data / Parameter	$C_{PAGMT}^{[m=0]}$
Data unit	tCO ₂ e/ha

Description	Project carbon stocks in above-ground merchantable trees prior to first verification event
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.1 MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring event
Value monitored	101.76
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Average of plot measurements in a given stratum
Comments	

Data / Parameter	$C_{PBM}^{[m=0]}$
Data unit	tCO2e
Description	Project carbon stocks in biomass prior to first verification event
Source of data	Project Accounting Area sampling

Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring event
Value monitored	266,145,566.3
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.16]
Comments	

Data / Parameter	$c_{Pb}^{[m]}$
Data unit	tCO ₂ e/ha
Description	Average carbon in biomass in the Project Accounting Area
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is

	associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every time measure (≤ 5 yrs)
Value monitored	877.61
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Average of plot measurements in a given stratum
Comments	

Data / Parameter	$C_{P\,SOC}^{[m=0]}$
Data unit	tCO2e/ha
Description	Project soil carbon stocks prior to first verification event in the Forest Project Accounting Area
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.6 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	First monitoring period

Value monitored	61.0
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Average of plot measurements in a given stratum
Comments	

Data / Parameter	$C_{P \Delta WP}^{[m]}$
Data unit	tCO2e
Description	Project carbon stocks in wood products at the end of the current monitoring period
Source of data	Project Accounting Area sampling
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix C and MNRP's standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	966,664
Monitoring equipment	Equipment list in Annex 20

QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [C.2]
Comments	

Data / Parameter	$E_{\Delta GER}^{[m5]}$
Data unit	tCO2e
Description	GERs for the current monitoring period
Source of data	Area measurements
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 section 8.4.1 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	5,707,477
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of GER calculations, monitoring records for

	errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equations [F.47]
Comments	

Data / Parameter	$E_{\Delta GER}^{[m4]}$
Data unit	tCO2e
Description	GERs for the previous monitoring period M4
Source of data	Area measurements
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 section 8.4.1 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	8,615,284
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of GER calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.

Calculation method	Equation [F.47]
Comments	

Data / Parameter	$E_{\Delta NER}^{[m5]}$
Data unit	tCO2e
Description	NERs for monitoring period <i>i</i>
Source of data	Area measurements
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 section 8.4.3 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	prior monitoring period
Value monitored	4,782,428
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of NER calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.49]
Comments	

Data / Parameter	$E_B^{[m5]}$
Data unit	Cumulative baseline emissions at the end of the current monitoring period
Description	Proxy area measurements
Source of data	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 section 8.1 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Description of measurement methods and procedures to be applied	Every monitoring period
Frequency of monitoring/recording	63,383,866
Value monitored	Equipment list in Annex 20
Monitoring equipment	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
QA/QC procedures to be applied	Calculation of baseline emissions.
Purpose of the data	Equation [F.15]
Calculation method	
Comments	Cumulative baseline emissions at the end of the current monitoring period

Data / Parameter	$E_B^{[m4]}$
Data unit	tCO2e
Description	Cumulative baseline emissions at the beginning of the previous monitoring period
Source of data	Proxy area measurements
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 section 8.1 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	56,991,037
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.15]
Comments	

Data / Parameter	$E_{B\Delta}^{[m5]}$
Data unit	tCO2e
Description	Change in baseline emissions

Source of data	Proxy area measurements
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 section 8.1 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	6,392,829
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.14]
Comments	

Data / Parameter	$E_{B \Delta BGB}^{[m5]}$
Data unit	tCO2e
Description	Change in baseline emissions from below-ground biomass from previous monitoring period
Source of data	Monitoring the proxy area

Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.3 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	2,080,463
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.29]
Comments	

Data / Parameter	$E_{B \Delta DW}^{[m5]}$
Data unit	tCO ₂ e
Description	Change in baseline emissions from dead wood in monitoring period M5
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2.4, B.2.5 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made

	between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	17,230
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.33]
Comments	

Data / Parameter	$E_{B \Delta SOC}^{[m5]}$
Data unit	tCO ₂ e
Description	Baseline change in emissions from soil carbon
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.2.1, 8.1.2.2, 8.1.2.3 and Appendix B.2.6 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period

Value monitored	16,385
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions
Calculation method	Equation [F.25]
Comments	

Data / Parameter	$E_{B \Delta SOC}^{[m5]}$
Data unit	tCO ₂ e
Description	Baseline emissions from soil carbon in monitoring period M5
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.2.1, 8.1.2.2, 8.1.2.3 and Appendix B.2.6 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	96,259
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This

	includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.25]
Comments	

Data / Parameter	$E_{B\ AGMT}^{[m5]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from above-ground commercial trees at the end of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.6.1, 8.1.6.2, 8.1.6.3 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	11,915,084
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.37]

Comments	
Data / Parameter	$E_{B\ BGG}^{[m5]}$
Data unit	tCO2e
Description	Cumulative baseline emissions from below-ground biomass at the end of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.4 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	20,210,216
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.39]
Comments	
Data / Parameter	$E_{B\ BGG}^{[m-1]}$

Data unit	tCO ₂ e
Description	Cumulative baseline emissions from below-ground biomass at the beginning of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.4 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	18,129,752
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QA/QC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.29]
Comments	

Data / Parameter	$E_{BBM}^{[m5]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from biomass at the end of the current monitoring period
Source of data	Measurements in the proxy area

Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.1, 8.1.5.1 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	74,832,420
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.15]
Comments	

Data / Parameter	$E_{B\ DW}^{[m5]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from dead wood at the end of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.3 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made

	between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	1,078,440
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.32]
Comments	

Data / Parameter	$E_{B\,DW}^{[m4]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from dead wood at the beginning of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.3 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period

Value monitored	1,061,210
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.32]
Comments	

Data / Parameter	$E_{B SOC}^{[m5]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from soil carbon at the end of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.2.1, 8.1.2.2, 8.1.2.3 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	96,259
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality

	Control Procedure v1.6” from the previous monitoring period. This includes a review of monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.27]
Comments	

Data / Parameter	$E_{B SOC}^{[m4]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from soil carbon at the beginning of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.1.2.1, 8.1.2.2, 8.1.2.3 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	216,792
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.

Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.27]
Comments	

Data / Parameter	$E_{BA}^{[m5]}$
Data unit	tCO ₂ e
Description	Cumulative emissions allocated to the buffer account at the end of the current monitoring period
Source of data	N/A
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.4.4 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	4,893,573
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Multiplication

Comments

Data / Parameter	$E_L^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions from leakage at the end of the current monitoring period
Source of data	Measurements in the leakage area(s)
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	N/A
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	N/A
Purpose of the data	Calculation of leakage.
Calculation method	Equation [F.42]
Comments	Parameter not used

Data / Parameter	$E_L^{[m-1]}$
Data unit	tCO2e
Description	Cumulative emissions from leakage at the beginning of the current monitoring period
Source of data	Measurements in the leakage area(s)

Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	N/A
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	N/A
Purpose of the data	Calculation of leakage.
Calculation method	Equation [F.42]
Comments	Parameter not used.

Data / Parameter	$E_{L\Delta}^{[m]}$
Data unit	tCO2e
Description	Change in emissions due to leakage
Source of data	N/A
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	N/A
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	Review of monitoring records

Purpose of the data	Calculation of leakage.
Calculation method	Equation [F.41]
Comments	Parameter not used.

Data / Parameter	$E_{L\ AS\ F}^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions from activity-shifting leakage at the end of the current monitoring period
Source of data	Measurements in the activity-shifting leakage area
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	N/A
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	Review of monitoring records
Purpose of the data	Calculation of leakage.
Calculation method	Equation [F.43]
Comments	Parameter not used.

Data / Parameter	$E_{L\ ME}^{[m]}$
Data unit	tCO2e

Description	Cumulative emissions from market leakage at the end of the current monitoring period
Source of data	Measurements in the market-effects leakage area
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	N/A
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	Review of monitoring records
Purpose of the data	Calculation of leakage.
Calculation method	Equation [F.45]
Comments	Parameter not used.

Data / Parameter	$E_{P\Delta}^{[m]}$
Data unit	tCO2e
Description	Change in project emissions
Source of data	Monitoring records for forest fire, burning, logging, wood products, and natural disturbance events
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.

Frequency of monitoring/recording	Every monitoring period
Value monitored	661,595.8
Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of project emissions.
Calculation method	Equation [F.39]
Comments	

Data / Parameter	$E_{P\Delta BRN}^{[m]}$
Data unit	tCO2e
Description	Cumulative project emissions due to burning at the end of the current monitoring period
Source of data	Monitoring plots in the project
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.2.2 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0

Monitoring equipment	Equipment list in Annex 20
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of project emissions.
Calculation method	Equation [F.40]
Comments	

Data / Parameter	$E_U^{[m]}$
Data unit	tCO2e
Description	Cumulative confidence deduction at the end of the current monitoring period
Source of data	N/A
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 sections 8.4.1.1 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	Equipment list in Annex 20

QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of calculations, monitoring records for errors and 5% of plots being remeasured and compared to initial sample with a t-test.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.51]
Comments	

Data / Parameter	$p_{L\ DEG}^{[m]}$
Data unit	proportion (unitless)
Description	Portion of leakage due to degradation in forest at the end of the current monitoring period
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	N/A
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of the data	Calculation of leakage
Calculation method	Summation across leakage plots
Comments	Parameter not used

Data / Parameter	$p_{L\ DEG}^{[m=0]}$
Data unit	tCO2e
Description	proportion (unitless)
Source of data	Portion of leakage due to degradation prior to first verification event
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	N/A
Monitoring equipment	N/A
QA/QC procedures to be applied	N/A
Purpose of the data	Calculation of leakage
Calculation method	Summation across leakage plots
Comments	Parameter not used

Data / Parameter	$p_{SL}^{[m]}$
Data unit	proportion (unitless)
Description	Proportion of AGMT that is not merchantable and goes into slash estimated from inventory
Source of data	Estimated from inventory
Description of measurement methods and procedures to be applied	VCS Methodology VM0009 V2.0 Section 8.1.6.3

Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value monitored	0.0905
Monitoring equipment	N/A
QA/QC procedures to be applied	Review of monitoring records
Purpose of the data	Calculation of project emissions.
Calculation method	Summation across leakage plots
Comments	Parameter not used

Data / Parameter	$t^{[m-1]}$
Data unit	days
Description	Time from Project Start Date to beginning of current monitoring period
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	3,946
Monitoring equipment	N/A
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality

	Control Procedure v1.6” from the previous monitoring period. This includes a review of calculations, monitoring records for errors
Purpose of the data	Calculation of baseline emissions.
Calculation method	Subtraction
Comments	

Data / Parameter	$t^{[m]}$
Data unit	days
Description	Time from project start date to end of current monitoring period
Source of data	days
Description of measurement methods and procedures to be applied	Time from project start date to end of current monitoring period
Frequency of monitoring/recording	Monitoring records
Value monitored	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.2 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Monitoring equipment	Every monitoring period
QA/QC procedures to be applied	4,311
Purpose of the data	N/A
Calculation method	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality

	Control Procedure v1.6” from the previous monitoring period. This includes a review of calculations, monitoring records for errors
Comments	Calculation of baseline emissions.

Data / Parameter	$U_B^{[m]}$
Data unit	tCO2e
Description	Total uncertainty in Proxy Area carbon stock estimate
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.1.5 and MNRP’s standard operating procedures “Standard Operating Procedure Lac Mai Ndombe - Forest Inventory”. Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	15.62
Monitoring equipment	N/A
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, “Annex 14-Quality Control Procedure v1.6” from the previous monitoring period. This includes a review of calculations, monitoring records for errors
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [B.32]
Comments	

Data / Parameter	$U_{EM}^{[M]}$
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Data unit	tCO2e/ha
Description	Total uncertainty in Baseline Emissions Models for the Project Accounting Area
Source of data	N/A
Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 section 6.8.10 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0.009
Monitoring equipment	N/A
QA/QC procedures to be applied	QA/QC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of calculations, monitoring records for errors
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.13]
Comments	

Data / Parameter	$U_P^{[m]}$
Data unit	tCO2e/ha
Description	Total uncertainty in the Project Accounting Area carbon stock estimate
Source of data	Equation [B.32] and field measurements in the PAA

Description of measurement methods and procedures to be applied	This parameter was measured in accordance with the VCS standard and AFOLU guidance, using the procedures outlined in the VCS Methodology VM0009 V2.0 Appendix B.1.5 and MNRP's standard operating procedures "Standard Operating Procedure Lac Mai Ndombe - Forest Inventory". Wildlife Works was responsible for the measurement. All measurements were made between 2011 and 2022. Accuracy level achieved is good, and is associated with the quality of the field measurements and calculations.
Frequency of monitoring/recording	Every monitoring period
Value monitored	35.55
Monitoring equipment	N/A
QA/QC procedures to be applied	QAQC procedures are in line with the requirements of VM0009 v2 section B.4 and are outlined in the document, "Annex 14-Quality Control Procedure v1.6" from the previous monitoring period. This includes a review of calculations, monitoring records for errors
Purpose of the data	Calculation of baseline emissions.
Calculation method	Equation [F.51]
Comments	

Data / Parameter	$x^{[m]}$
Data unit	varies
Description	Covariate values
Source of data	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	Every time measured (≤ 5 yrs)

Value monitored	
Monitoring equipment	N/A
QA/QC procedures to be applied	Review of monitoring records
Purpose of the data	Calculation of baseline emissions.
Calculation method	N/A
Comments	Parameter not used

3.1.3 Monitoring Plan (VCS, 3.16, 3.20)

A plan has been developed to monitor the MNRP's impact on its climate related objectives, namely the reduction in the emissions of tCO₂e by reducing deforestation in the Project Area. The primary objective of the monitoring plan is to ensure accurate estimates of carbon stocks and carbon emission reductions from the REDD+ Project over the crediting period of the Project. The climate monitoring plan includes three primary monitoring activities that will be performed throughout the lifetime of the MNRP. These activities, and their frequency are shown in Table 3-1. The organizational structure, responsibilities and competencies of the personnel that carried out the monitoring activities are described below.

Table 3-1: Primary monitoring activities.

Activity	Frequency	Method
Forest Patrols and Perimeter Observation	Weekly	Patrol teams inspect perimeter of project area via ground-based assessments
Plot Measurements	Annually	Sampling teams visit a portion of forest plots in the project area.
Identification of significant disturbance	Annually or after major disturbance event	Periodic inspection of aerial imagery or videography, satellite imagery or other remote sensing product with ground inspection when necessary

Descriptions of these monitoring activities are described in “Annex 4 – Mai Ndombe VCS REDD+ Monitoring Plan v1.9.pdf”. In addition to these three primary Project monitoring activities several additional monitoring activities will happen at informal frequencies during the

Project Partners' general operations. This includes regular patrols through the Project Area by project staff and members of the local communities, and outreaches to the communities. These additional monitoring activities will serve to identify many instances of encroachment or tree harvesting that may occur in the Project Area. The monitoring plan is meant as a guide to maintain consistency during monitoring and includes training and internal audit procedures for quality control. It is meant as a working document to be revised as needed during the course of the Project. When revisions are necessary, they should be noted as monitoring deviations in the subsequent monitoring report prepared for a VCS and CCB verification event.

Organizational Structure

Wildlife Works has two dedicated plot sampling teams, each team containing eight sampling specialists. The teams are under the supervision of Jean-Robert B. Bwangoy-Bankanza, WWC's DRC Country manager and ERA Congo's Administrateur Gérant (Managing Director). Each team is directed by a team leader, who is trained in GPS operation and forest sampling techniques. The team leader must additionally demonstrate proficiency in species identification and biometric estimation techniques (calculating DBH, height, measuring angle from north, etc.). These team leads have typically grown into their position with experience and proven acumen in the field, and the positions are coveted within the Wildlife Works hierarchy. The joint team leaders are Djems Mbalaka and Panest Ngubidi. Their names are attached to each soil and biomass plot data sheet. All discrepancies can be easily traced back to date and time of collection, as well as team members who collected the data. To minimize any conflict between team members, or job burn-out, plot team members continuously change positions, and the team members switch teams often.

Data Collection, Storage and Aggregation

Data collected in the field is systematically translated into carbon. The carbon model contains dropdown lists and pre-filled formulas to ensure accuracy of entry and minimize human translation error. Data for this monitoring period were entered by the staff archivist. Data entry is crosschecked internally, as well as by staff in the U.S. office. Data goes through a final check by the U.S. based carbon development staff, where any outlying or otherwise inconsistent or unusual data is identified and rectified.

Carbon accounting is ultimately the responsibility of the VP of Carbon Development, and all models and procedures adhere to the VCS methodology. Digital copies of all data and models are maintained at Wildlife Works' Carbon Development office in Vermont. Please refer to "Annex 27-Data Management Procedure" to view the methods used for recording, storing, and aggregating the data.

Field Training

The field protocols (SOPs) for biomass and soils were produced using the experiences and expertise of field techniques by the initial plot sampling team. Whenever necessary, the

biomass and soil sampling SOPs are revised to encompass new techniques, methods, or metrics. Two teams have been trained using this procedure and undergo several checks to ensure consistency in method. Before each monitoring event, plot teams undergo field training from Djems Mbalaka and Panest Ngubidi to refresh their knowledge and incorporate any additions to the SOP. Any further questions are brought to Simon Bird.

Internal Auditing

Internal checks are routinely performed on biomass, soil, and leakage plots. The Director of Forest Science and Project Management embark on "check cruises" to evaluate the employees' work and management often audits individual measurements on an as-needed basis. Wildlife Works has also instituted an official Quality Assurance and Quality Control (QA / QC) system for biomass plots, which has been reviewed by the validators (see QA / QC Standard Operating Procedure). As mentioned above, after the data is translated into electronic format, various internal checks are performed to eliminate errors. Wildlife Works management continually reviews the work done by other members of management to ensure there are no outlying data or unexplained inconsistencies. Wildlife Works' policy is that all work products shall be internally reviewed by at least a second person before publication.

The following is a summary of the plans to monitor Climate, Community and Biodiversity (CCB) impacts on the environment because of the carbon Project's direct influence. For details, please refer to the CCB Project Monitoring Plan (PMP), which was provided to the CCB validation auditors. Please also refer to Sections CL3, CM3 and B3 for Climate, Community and Biodiversity monitoring plans, respectively, in the Project's CCB PDD.

Climate Monitoring

As this Project seeks full CCB/VCS accreditation, all climate monitoring is assumed to fall under the VCS monitoring plan, which is fully described in the Project Monitoring Plan sections above, and also in the Project's VCS PD Section 4.3 Description of the Monitoring Plan. Additional specific monitoring information can be found in the Standard Operating Procedures for Biomass and soil.

The following Carbon Pools are monitored for MNRP, as specified under the VCS methodology VM0009 V2.0.

Table 3-2: The Carbon Pools that are included in the MNRP

Pool	Required	Included in Project?	Justification
Above-ground merchantable tree	Required	Yes	Major pool considered

Above-ground non-merchantable tree	Required	Yes	Major pool considered
Above-ground non-tree	Optional	No	Conservatively excluded
Below-ground merchantable tree	Optional	Yes	Major pool considered
Below-ground non-merchantable tree	Optional	Yes	Major pool considered
Below-ground non-tree	Optional	No	Conservatively excluded
Litter	No	No	Conservatively excluded
Dead wood	Optional	No	Conservatively excluded
Standing deadwood	Optional	No	Conservatively excluded
Lying deadwood	Optional	No	Conservatively excluded
Soil organic carbon	Optional	Yes	Major pool considered
Wood Products	Required	Yes	Major pool considered

MRR.83 Documentation of data quality assessment such as a check cruise and plots of the data such as diameter distributions by strata or plot.

Per VM0009 V2.0 MR.83, the QA/QC SOP was employed during the M5 monitoring period to re-measure 7% (4) of the biomass plots measured (55). QA/QC re-measurement was carried out by teams different than those that originally measured the plots. A t-test is used to determine if there is a significant difference between plot-level measurements of the QA inventory and that same 7% of the original inventory. The t-test was passed (no difference exists between 1% and the paired differences between QA and original measurements at 90% confidence level); (Table 6). *This result verifies that the mean estimate of carbon from QA plots is not significantly greater than or less than the mean estimate from their counterparts in the original inventory and per the QA/QC SOP no additional training or re-measurement is required.*

Table 3-3: QA/QC Results for 7% of M5 biomass plots

	QC Basis	Inventory Basis
1% of Estimated Mean (tCO _{2e})	10.69323944	10.5945937
Estimated Mean of Paired Differences (tCO _{2e})	9.864573504	9.864573504

Standard Error of Paired Differences (tCO ₂ e)	5.971312019	5.971312019
Difference between 1% and Paired Difference (tCO ₂ e)	-0.828665931	-0.730020196
t Statistic	-0.138774515	-0.122254572
df	3	3
p Value (1 - alpha)	0.550789896	0.544786406
H0: No difference between 1% and Paired Difference at 90% Level	TRUE	TRUE
H1: Difference greater than or equal to 1% and Paired Difference at 90% Level	FALSE	FALSE

MRR.84 Maps of a stratification (if any) and references to plot allocation.

Please refer to the MNRP VCS PD Appendix A for maps of Project Area land cover stratification, and discussion of forest sample plot and soil plot allocation.

MRR.85 List of plot GPS coordinates.

Please refer to the Climate Monitoring Plan for a comprehensive list of all sample plots and their GPS coordinates.

MRR. 86 Description of plot sizes and layout (such as the use of nests and their sizes) for each carbon pool.

A permanent circular nested plot design was used for the biomass sample plots. The tree plot radius for this project is 15 meters, which corresponds to a 0.07 ha plot area. The minimum diameter for considering an individual plant as a tree for the project is 10 cm diameter at 1.3 m above the ground (DBH). All smaller woody plants are considered shrubs. Shrubs are not an included carbon pool in the MNRP.

Table 3-4: Tree Plot Radii

Area	Plot Radius
Tree Plots in all Strata	15 meters

MRR.87 If applicable, a detailed description of the process used to develop allometric equations, to include:

- Sample size
- Distribution (e.g. diameter) of the sample
- Model fitting procedure
- Model selection

Please refer to Appendix 4 for a description of the allometry used and a documentation of how the requirements of the methodology VM0009 V2 were met.

MRR.88 The estimated carbon stock, standard error of the total for each stock, and the sample size for each stratum in the area selected.

Please refer to Annex 15 – MNRP Carbon Model

MRR.90 Deviations from the measurement methods set out in VCS Methodology VM0009 V2.0 Appendix B or the monitoring plan, per current VCS requirement.

As noted in Sections 2.2.2 and 2.2.4, the project revised the forest inventory sampling plan during the M3 monitoring period. Due to operational challenges and the COVID-19 pandemic, 100% remeasurement of the project sample plots within five years had not been achieved in the previous monitoring period. However, during the current M5 the project has come into compliance with all measurement methods set out in the methodology and the VCS standard.

MRR.91 The frequency of monitoring for each plot for all plots – all plots should be measured for the first verification. All leakage plots should be measured every verification, and all proxy and project accounting area plots at least every five years, or after a significant event that changes stocks.

For this Monitoring Period (M5), a total of 55 plots were measured. As such, the MNRP has successfully remeasured 100% of the forest inventory plots within the last 5 years, except for 1 plot that could not be safely accessed. For the frequency of monitoring for the biomass plots please refer to the Climate Monitoring Plan. The project does not have any leakage area plots.

3.1.4 Dissemination of Monitoring Plan and Results (VCS, 3.18; CCB V3, CL4.2; CCB V2, CL4.2)

The climate monitoring plan was established and accepted by the Project Proponent. The plan has been made available for public review at the project office and was made available to each CLD in the Project Zone during the first monitoring period (M1). Climate monitoring calculations and results are included in this document and also publicly available for review at the Project Office (hard copy). A monitoring report summary was written and provided to communities throughout the project zone in English, French and Lingala. The monitoring report has additionally been posted to the website of the VCS and CCB for public review and comment.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions (VCS, 3.15)

The Project baseline as calculated in the PD Section 3.1 was applied to the project. A summary of the calculations is provided below.

MRR.11 Calculations of baseline emissions $E_{BA}^{[m-1]}$ from prior monitoring periods.

Baseline emissions $E_{BA}^{[m]}$ from prior monitoring periods are calculated using equation [F.14] of the VCS Methodology VM0009, Version 2.0:

$$E_{BA}^{[m]} = E_B^{[m]} - E_B^{[m-1]}$$

Where;

$E_{BA}^{[m]}$ = Change in baseline emissions

$E_B^{[m]}$ = Cumulative baseline emissions at the end of the prior monitoring period

$E_B^{[m-1]}$ = Cumulative baseline emissions at the beginning of the prior monitoring period

M1:

$$E_{BA}^{[m1]} = 3,401,416 - 0 = 3,401,416 \text{ tCO}_2\text{e}$$

M2:

$$E_{BA}^{[m2]} = 19,919,574 - 3,401,416 = 16,518,158 \text{ tCO}_2\text{e}$$

M3:

$$E_{BA}^{[m3]} = 50,870,935 - 19,919,574 = 30,951,362 \text{ tCO}_2\text{e}$$

M4:

$$E_{BA}^{[M4]} = 56,991,037 - 50,870,935 = 6,120,102 \text{ tCO}_2\text{e}$$

MRR.10 Calculations of current baseline emissions $E_{BA}^{[m]}$ as of the current monitoring period.

Current baseline emissions $E_{BA}^{[m]}$ as of the current monitoring period are calculated using equation [F.14] of the VCS Methodology VM0009, Version 2.0:

$$E_{BA}^{[M5]} = E_B^{[M5]} - E_B^{[M4]}$$

Where;

$E_{BA}^{[M5]}$ = Change in baseline emissions

$E_B^{[M5]}$ = Cumulative baseline emissions at the end of the current monitoring period

$E_B^{[M4]}$ = Cumulative baseline emissions at the beginning of the previous monitoring period

$$E_{BA}^{[M5]} = 63,383,866 - 56,991,037 = 6,392,829 \text{ tCO}_2\text{e}$$

MRR.12 Calculations of cumulative baseline emissions for each selected pool (E_B BMm and EB SOCm) and undecayed carbon (CB BGBm, CB DWm, CB SOCm and CB Wpm), as of the current monitoring period.

Cumulative baseline emissions from biomass $E_{B\ BM}^{[m]}$ are estimated for both the PAA using equation [F.19] of the VCS methodology VM0009 V2.0:

$$E_{B\ BM}^{[M5]} = BEM_{P1} \left(c_{P\ BM}^{[m=0]}, c_{B\ BM}^{[m5]}, t^{[m5]}, x^{[m5]} \right)$$

This estimate employs a Biomass Emissions Model (BEM) for baseline P1 using equation [F.2] of the VCS Methodology VM0009 V2.0:

$$BEM_{P1}(c_P, c_B, t, x) = \frac{m(t - t_{PA})}{365(1 + e^{t - t_{SA} - t_{PA} - t_{PAI}})} + \frac{A_{PAA}(c_P - c_B)e^{t - t_{SA} - t_{PA} - t_{PAI}} + \frac{HA_{P1}(c_P, c_B)t}{t_{PL} - t_{PAI}}}{(1 + e^{t - t_{SA} - t_{PA} - t_{PAI}}) \left[1 + e^{\ln\left(\frac{365A_{PAA}(c_P - c_B)}{m(t_{SA} - t_{PAI})} - 1\right) - \beta(t - t_{SA} - t_{PA} - t_{PAI}) - \theta(x - x_{PAI} - x_{SA})^T} \right]} - HA_{P1}(c_P, c_B)$$

Where;

$$HA_{P1}(c_P, c_B) = \frac{m}{365(1 + e^{t - t_{SA} - t_{PA} - t_{PAI}})} + \frac{A_{PAA}(c_P - c_B)e^{t - t_{SA} - t_{PA} - t_{PAI}}}{(1 + e^{t - t_{SA} - t_{PA} - t_{PAI}}) \left[1 + e^{\ln\left(\frac{365A_{PAA}(c_P - c_B)}{m(t_{SA} - t_{PAI})} - 1\right) - \beta(t - t_{SA} - t_{PA} - t_{PAI}) - \theta(x - x_{PAI} - x_{SA})^T} \right]}$$

Where;

$C_P^{[m]}$ = Project carbon stocks at the end of the current monitoring period; 877.61 tCO₂e · ha⁻¹

$C_B^{[m]}$ = Baseline scenario average carbon stock in selected carbon pools; 100.64 tCO₂e · ha⁻¹

m = Average carbon in merchantable trees cut each year from legal commercial logging; 1,106,407.4 tCO₂e · yr⁻¹

t = Time since project start date; 4,311 days

β = Effect of time on the cumulative proportion of deforestation over time; 0.0006167

θ = Effect of certain covariates of the cumulative proportion of deforestation over time; 0

t_{PA} = Time prior to the project start date when the primary agent began commercial logging in the project accounting area; 2,901 days

t_{PAI} = Number of days after the project start date for the start of a project activity instance in a grouped project; 0

t_{SA} = Arrival time of secondary agents after start of commercial logging; 1,825 days

x_{SA} = Covariate values as of the arrival of the secondary agents; 0

A_{PAA} = Area of project accounting area; 248,956 ha

t_{PL} = Length of project accrediting period; 10,957 days

3.2.1.1 Calculating Baseline Emissions from Biomass

MRR.13 Calculations of cumulative baseline emissions from biomass EB $E_{B\ BM}^{[m]}$ for the current monitoring period.

As discussed above, baseline emissions are calculated as per the PD and described in the following subsections:

Cumulative baseline emission for current monitoring period (M5):

$$BEM_{P1}(c_P, c_B, t, x) = 74,832,420 \text{ tCO}_2\text{e}$$

MRR.14 Calculations of cumulative baseline emissions from biomass EB $E_{B\ BM}^{[m]}$ for all prior monitoring periods.

$$M1: BEM_{P1}(c_P, c_B, t, x) = 4,930,246 \text{ tCO}_2\text{e}$$

$$M2: BEM_{P1}(c_P, c_B, t, x) = 26,053,941 \text{ tCO}_2\text{e}$$

$$M3: BEM_{P1}(c_P, c_B, t, x) = 62,434,590 \text{ tCO}_2\text{e}$$

$$M4: BEM_{P1}(c_P, c_B, t, x) = 67,129,083 \text{ tCO}_2\text{e}$$

Please refer to Annex 13 – MNRP NER Worksheet.

3.2.1.2 Calculating Baseline Emissions from SOC for Baseline Types P1 and P2

MRR.19 An estimate of cumulative baseline emissions from SOC $E_{B\ SOC}^{[m]}$ for the current monitoring period.

Cumulative baseline emissions from SOC $E_{B\ SOC}^{[M]}$ for baseline types P1 and P2 are estimated using equation [F.24] of the VCS Methodology VM0009 V2.0:

$$E_{B\ SOC}^{M5} = SEM_P \left(c_{P\ SOC}^{[M=0]}, c_{B\ SOC}^{[M5]}, t^{[M4]}, x^{[M5]} \right)$$

The estimate employs the Soil Emissions Model (SEM) for baseline type P1 using equation [F. 6] of the VCS Methodology VM0009 V2.0:

$$SEM_P(c_P, c_B, t, x) = \frac{A_{PAA}(c_P - c_B)}{1 + e^{-\alpha - \beta(t + \gamma - t_{PA} - t_{PAI}) - \theta(x - x_{PAI})^T}} \left[1 + \frac{t}{t_{PL} + t_{PL}e^{-\alpha - \beta(\gamma - t_{PA} - t_{PAI}) - \theta(x_0 - x_{PAI})^T}} \right] - \frac{A_{PAA}(c_P - c_B)}{1 + e^{-\alpha - \beta(\gamma - t_{PA} - t_{PAI}) - \theta(x_0 - x_{PAI})^T}}$$

Where;

$C_B^{[M5]}$ = Baseline carbon stock in selected carbon pools; $100.64 \text{ tCO}_2\text{e} \cdot \text{ha}^{-1}$

$C_P^{[M5]}$ = Project carbon stocks at the end of the current monitoring period; $877.61 \text{ tCO}_2\text{e} \cdot \text{ha}^{-1}$

t_{PA} = Time prior to the project start date when the primary agent began commercial logging in the project accounting area; -2,901 days

α = Combined effects of β and θ at the start of the historic reference period; 0.95

β = Effect of time on the cumulative proportion of deforestation over time; 0.00062

θ = Effect of certain covariates of the cumulative proportion of deforestation over time; 0

y = Longitude of the sample point; -8720

t = Time since project start date; 4,311 days

x = Covariate values; 0

x_0 = Covariate values as of the start of the project date; 0

A_{PAA} = Area of project accounting area; 248,956 ha

t_{PAI} = Number of days after the project start date for the start of a project activity instance in a grouped project; 0 days

$$SEM_p(c_p, c_B, t, x) = 96,259 \text{ tCO}_2e$$

MRR.18 An estimate of current baseline emissions from SOC $E_{BASOC}^{[m]}$ as of the current monitoring period.

Current baseline emissions from SOC $E_{BASOC}^{[M]}$ as of the current monitoring period are estimated using equation [F.25] of the VCS Methodology VM0009 V2.0:

$$E_{BASOC}^{[M5]} = E_{BASOC}^{[M5]} - E_{BASOC}^{[M5-1]}$$

Where;

$E_{BASOC}^{[M5]}$ = Cumulative baseline emissions from soil carbon at the end of the current monitoring period

$E_{BASOC}^{[M5-1]}$ = Cumulative baseline emissions from soil carbon at the beginning of the current monitoring period

$$E_{BASOC}^{[M5]} = 96,259 - 216,792 = 16,385 \text{ tCO}_2e$$

MRR.20 Calculations of cumulative baseline emissions from SOC $E_{BASOC}^{[m]}$ for all prior monitoring periods.

M1:

$$E_{BASOC}^{[M1]} = 65,546 - 0 = 65,546 \text{ tCO}_2e$$

M2:

$$E_{BASOC}^{[M2]} = 375,640 - 65,546 = 310,094 \text{ tCO}_2e$$

M3:

$$E_{BASOC}^{[M3]} = 995,849 - 375,640 = 192,878 \text{ tCO}_2e$$

M4:

$$E_{B\Delta SOC}^{[M4]} = 216,792 - 176,943 = 39,849 \text{ tCO}_2e$$

Please refer to Annex 13 – MNRP NER Worksheet.

3.2.1.3 Calculating Carbon Not Decayed in DW

MRR.27 An estimate of carbon stored in non-decayed DW $C_{B\Delta DW}^{[M]}$ for the current monitoring period.

Cumulative carbon stored in non-decayed DW $C_{B\Delta DW}^{[M]}$ as of the current monitoring period are estimated using equation [F.35] of the VCS Methodology VM0009 V2.0:

$$C_{B\Delta DW}^{[M5]} = \sum_{i \in \mathcal{M}} DEM_{DW,BGB} \left(E_{B\Delta DW}^{[M5]}, t^{[M5]}, t^{[M5-1]} \right)$$

Where;

$E_{B\Delta DW}^{[M5]}$ = Cumulative emissions from dead wood at the end of the current monitoring period; 36,757 tCO₂e

$t^{[M5]}$ = Time from project start date to end of current monitoring period; 4,311 days

$t^{(M5-1)}$ = Time from project start date to beginning of current monitoring period; 3,946 days

$$C_{B\Delta DW}^{[M5]} = -291,271 \text{ tCO}_2e$$

Please refer to Annex 13 – MNRP NER Worksheet.

MRR.28 An estimate of cumulative baseline emissions from DW $E_{B\Delta DW}^{[m]}$ for the current monitoring period.

Cumulative baseline emissions from DW $E_{B\Delta DW}^{[M5]}$ as of the current monitoring period are estimated using equation [F.32] of the VCS Methodology VM0009 V2.0:

$$E_{B\Delta DW}^{[m5]} = p_{SL}^{[m5]} \cdot E_{B\Delta AGMT}^{[m5]}$$

Where;

$E_{B\Delta AGMT}^{[m5]}$ = Cumulative baseline emissions from above- ground commercial trees at the end of the current monitoring period; 11,915,084 tCO₂e

$p_{SL}^{[M5]}$ = Proportion of AGMT that is not merchantable and goes into slash estimated from inventory; 0.0905 tCO₂e · ha⁻¹

$$E_{B\Delta DW}^{(m5)} = 1,078,440 \text{ tCO}_2e$$

Please refer to Annex 13 – MNRP NER Worksheet.

MRR.30 Calculations of cumulative baseline emissions from DW $E_{B\Delta DW}^{[m]}$ for all prior monitoring periods.

M₁:

$E_{B\ AGMT}^{[m1]}$ = Cumulative baseline emissions from above- ground commercial trees at the end of the current monitoring period; 1,923,054 tCO₂e

$p_{SL}^{[m1]}$ = Proportion of AGMT that is not merchantable and goes into slash estimated from inventory; 0.0905 tCO₂e · ha⁻¹

$$E_{B\ DW}^{[m1]} = 174,056 \text{ tCO}_2\text{e}$$

M₂:

$E_{B\ AGMT}^{[m2]}$ = Cumulative baseline emissions from above- ground commercial trees at the end of the current monitoring period; 7,395,725 tCO₂e

$p_{SL}^{[m2]}$ = Proportion of AGMT that is not merchantable and goes into slash estimated from inventory; 0.0905 tCO₂e · ha⁻¹

$$E_{B\ DW}^{[m2]} = 669,390 \text{ tCO}_2\text{e}$$

M₃:

$E_{B\ AGMT}^{[m3]}$ = Cumulative baseline emissions from above- ground commercial trees at the end of the current monitoring period; 11,804,004 tCO₂e

$p_{SL}^{[m3]}$ = Proportion of AGMT that is not merchantable and goes into slash estimated from inventory; 0.0905 tCO₂e · ha⁻¹

$$E_{B\ DW}^{[m3]} = 1,068,386 \text{ tCO}_2\text{e}$$

M₄:

$E_{B\ AGMT}^{[m4]}$ = Cumulative baseline emissions from above- ground commercial trees at the end of the current monitoring period; 11,724,722 tCO₂e

$p_{SL}^{[m4]}$ = Proportion of AGMT that is not merchantable and goes into slash estimated from inventory; 0.0905 tCO₂e · ha⁻¹

$$E_{B\ DW}^{(m4)} = 1,061,210 \text{ tCO}_2\text{e}$$

Please refer to Annex 13 – MNRP NER Worksheet.

3.2.1.4 Calculating Carbon Not Decayed in BGB

Carbon that has not yet decayed in the below ground biomass (BGB) carbon pool is estimated using equation [F.10] of the VCS Methodology VM0009 V3.0:

$$DEM_{DW,BGB} \left(E_{B\Delta}^{[M]}, t, t^{[M-1]} \right) = \frac{E_{B\Delta}^{[M]}}{1 + e^{t - t^{[M-1]} - 3650}} \left[1 - \frac{t - t^{[M-1]}}{3650} \right]$$

Where;

$E_{B\Delta}^{[M5]}$ = Change in baseline emissions; 6,392,829 tCO₂e

$t^{[M5]}$ = Time from project start date to end of current monitoring period; 4,311 days

$t^{[M4]}$ = Time from project start date to beginning of current monitoring period; 3,946 days

The Decay Emissions Model (DEM) for carbon in the BGB and deadwood (DW) carbon pools is based on the default VCS decay models for those pools.

MRR.32 An estimate of carbon stored in non-decayed BGB $C_{B\text{ BGB}}^{[M]}$ for the current monitoring period.

Please refer to Annex 13 – MNRP NER Worksheet.

Estimates of the carbon stored in non-decayed BGB for the current monitoring period are calculated using [F.30] of the VSC Methodology VM0009 V.2.0:

$$C_{B\text{ BGB}}^{[m5]} = \sum_{i \in M} DEM_{DW,BGB} (E_{B\Delta BGB}^{[m5]}, t^{[m5]}, t^{[m5-1]})$$

Where:

$t^{[m5]}$ = Time from project start date to end of current monitoring period; 4,311 days

$t^{[m5-1]}$ = Time from project start date to beginning of monitoring period i ; 3,946 days

$E_{B\Delta BGB}^{[m5]}$ = Change in baseline emissions from below-ground biomass during monitoring period i ; 2,237,738 tCO₂e

M = The set of all monitoring periods

$$C_{B\text{ BGB}}^{[m5]} = -9,663,033 \text{ tCO}_2\text{e}$$

MRR.33 An estimate of cumulative baseline emissions from BGB $E_{B\text{ BGB}}^{[M]}$ for the current monitoring period.

Please refer to Annex 13 – MNRP NER Worksheet.

Estimates of from BGB $E_{B\text{ BGB}}^{[m5]}$ for the current monitoring period are calculated using equation [F.28] of the VCS Methodology VM0009 V2.0:

$$E_{B\text{ BGB}}^{[m5]} = \frac{r_{RS} E_{B\text{ BM}}^{[m5]}}{1 + r_{RS}}$$

Where;

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio);
0.37

$E_{B\ BM}^{[m5]}$ = Cumulative baseline emissions from biomass at the end of the current monitoring period; 75,832,420 tCO₂e

$$E_{B\ BGB}^{[m5]} = 20,210,216 \text{ tCO}_2\text{e}$$

MRR.34 Calculations of cumulative baseline emissions from BGB $E_{B\ BGB}^{[m]}$ for all prior monitoring periods.

M1:

$$E_{B\ BGB}^{[m1]} = \frac{r_{RS} E_{B\ BM}^{[m1]}}{1 + r_{RS}}$$

Where;

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio);
0.37

$E_{B\ BM}^{[m1]}$ = Cumulative baseline emissions from biomass at the end of the current monitoring period; 4,930,246 tCO₂e

$$E_{B\ BGB}^{[m1]} = 1,331,526 \text{ tCO}_2\text{e}$$

M2:

$$E_{B\ BGB}^{[m2]} = \frac{r_{RS} E_{B\ BM}^{[m2]}}{1 + r_{RS}}$$

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio);
0.37

$E_{B\ BM}^{[m2]}$ = Cumulative baseline emissions from biomass at the end of the current monitoring period; 26,053,941 tCO₂e

$$E_{B\ BGB}^{[m2]} = 7,036,466 \text{ tCO}_2\text{e}$$

M3:

$$E_{B\ BGB}^{[m3]} = \frac{r_{RS} E_{B\ BM}^{[m3]}}{1 + r_{RS}}$$

Where;

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio);
0.37

$E_{B\ BM}^{[m3]}$ = Cumulative baseline emissions from biomass at the end of the current monitoring period;

62,434,590 tCO₂e

$$E_{B\ BGB}^{[m3]} = 16,861,897 \text{ tCO}_2\text{e}$$

M4:

$$E_{B\ BGB}^{[m4]} = \frac{r_{RS} E_{B\ BM}^{[m4]}}{1 + r_{RS}}$$

Where;

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio);
0.37

$E_{B\ BM}^{[4]}$ = Cumulative baseline emissions from biomass at the end of the current monitoring period;

67,129,083 tCO₂e

$$E_{B\ BGB}^{[m4]} = 18,129,752 \text{ tCO}_2\text{e}$$

3.2.1.5 Calculating Carbon Not Decayed in SOC

MRR.35 An estimate of carbon stored in non-decayed SOC $C_{B\ SOC}^{[m]}$ for the current monitoring period.

Carbon that has not yet decayed in the SOC carbon pool is estimated using equation [F.31] of the VCS Methodology VM0009 V2.0:

$$C_{B\ SOC}^{[m5]} = \sum_{i \in M} DEM_{SOC} \left(E_{B\ \Delta\ SOC}^{[m5]}, t^{[m5]}, t^{[m5-1]} \right)$$

Where;

$t^{[m5]}$ = Time from project start date to end of current monitoring period; 4,311 days

$t^{[m5-1]}$ = Time from project start date to beginning of monitoring period i ; 3,946 days

$E_{B\ \Delta\ SOC}^{[m5]}$ = Baseline change in emissions from soil carbon; 16,385 tCO₂e

M = The set of all monitoring periods

This estimate employs the Decay Emissions Model (DEM) for carbon in the SOC for baseline type P1 using equation [F.9] of the VCS Methodology VM0009 V2.0:

$$DEM_{SOC} \left(E_{B\ \Delta}^{[m]}, t, t^{[m-1]} \right) = E_{B\ \Delta}^{[m]} - \frac{365 E_{B\ \Delta}^{[m]}}{\lambda_{SOC} (t - t^{[m-1]})} \left[\frac{\lambda_{SOC} (t - t^{[m-1]})}{365} + e^{\frac{-\lambda_{SOC} (t - t^{[m-1]})}{365}} - 1 \right]$$

Where;

$t^{[m5-1]}$ = Time from project start date to beginning of monitoring period i ; 3,946 days

t = Time since project start date; 4,311 days

$E_{B\Delta}^{[m5]}$ = Change in baseline emission; 6,938,094 tCO₂e

λ_{SOC} = Exponential soil carbon decay parameter; 0.2

$C_{B\,SOC}^{[m5]} = 623,845 \text{ tCO}_2\text{e} \cdot \text{ha}^{-1}$

3.2.1.6 Calculating Cumulative Emissions from AGMT for Baseline Type P1

MRR.29 An estimate of cumulative baseline emissions from AGMT $E_{B\,AGMT}^{[m]}$ for the current monitoring period.

Please refer to Annex 13 – MNRP NER Worksheet.

Cumulative baseline emissions from AGMT $E_{B\,AGMT}^{[m]}$ for the current monitoring period is calculated using equation [F.35] of the VCS Methodology VM0009 V2.0:

$$E_{B\,AGMT}^{[m5]} = BEM_{P1}(C_{P\,AGMT}^{[m=0]} + c_{P\,BGMT}^{[m=0]} + c_{B\,AGMT}^{[m5]} + c_{B\,BGMT}^{[m5]} t^{[m5]}, x^{[m5]})(1 - \frac{r_{RS}}{1 + r_{RS}})$$

Where;

$c_{P\,AGMT}^{[m=0]}$ = Project carbon stocks in above-ground merchantable trees at project start; 99.44 tCO₂e · ha⁻¹

$c_{P\,BGMT}^{[m=0]}$ = Project carbon stocks in below-ground merchantable trees at project start; 36.79 tCO₂e · ha⁻¹

$c_{B\,AGMT}^{[m5]}$ = Baseline carbon stocks above-ground merchantable trees at the end of the current monitoring period; 85.37 tCO₂e · ha⁻¹

$c_{B\,BGMT}^{[m5]}$ = Baseline carbon stocks below-ground merchantable trees at the end of the current monitoring period; 31.59 tCO₂e · ha⁻¹

$t^{[m0]}$ = Length of project or logging in baseline scenario; 9,125 days

$x^{[m5]}$ = Covariate values; 0

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio); 0.37

$$E_{B\,AGMT}^{[m5]} = 11,915,084 \text{ tCO}_2\text{e}$$

MRR. 31 Calculations of cumulative baseline emissions from AGMT $E_{B\,AGMT}^{[m]}$ for all prior monitoring periods.

Please refer to Annex 13 – MNRP NER Worksheet.

Determining cumulative baseline emissions from AGMT $E_{B\,AGMT}^{[m]}$ for all prior monitoring periods is calculated using equation [F.35] of the VCS Methodology VM0009 V2.0:

M1:

$$E_{B\ AGMT}^{[m1]} = BEM_{P1}(c_{P\ AGMT}^{[m=0]} + c_{P\ BGMT}^{[m=0]} + c_{B\ AGMT}^{[m1]} + c_{B\ BGMT}^{[m1]} t^{[m1]}, x^{[m1]})(1 - \frac{r_{RS}}{1 + r_{RS}})$$

Where;

$c_{P\ AGMT}^{[m=0]}$ = Project carbon stocks in above-ground merchantable trees at project start; 99.44 tCO₂e · ha⁻¹

$c_{P\ BGMT}^{[m=0]}$ = Project carbon stocks in below-ground merchantable trees at project start; 36.79 tCO₂e · ha⁻¹

$c_{B\ AGMT}^{[m1]}$ = Baseline carbon stocks above-ground merchantable trees at the end of the current monitoring period; 99.44 tCO₂e · ha⁻¹

$c_{B\ BGMT}^{[m1]}$ = Baseline carbon stocks below-ground merchantable trees at the end of the current monitoring period; 36.79 0 tCO₂e · ha⁻¹

$t^{[m1]}$ = Length of project or logging in baseline scenario; 9,125 days

$x^{[m1]}$ = Covariate values; 0

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio); 0.37

$$E_{B\ AGMT}^{[m1]} = 1,923,054 \text{ tCO}_2\text{e}$$

M2:

$$E_{B\ AGMT}^{[m2]} = BEM_{P1}(c_{P\ AGMT}^{[m=0]} + c_{P\ BGMT}^{[m=0]} + c_{B\ AGMT}^{[m2]} + c_{B\ BGMT}^{[m2]} t^{[m2]}, x^{[m2]})(1 - \frac{r_{RS}}{1 + r_{RS}})$$

Where;

$c_{P\ AGMT}^{[m=0]}$ = Project carbon stocks in above-ground merchantable trees at project start; 99.44 tCO₂e · ha⁻¹

$c_{P\ BGMT}^{[m=0]}$ = Project carbon stocks in below-ground merchantable trees at project start; 36.79 tCO₂e · ha⁻¹

$c_{B\ AGMT}^{[m2]}$ = Baseline carbon stocks above-ground merchantable trees at the end of the current monitoring period; 96.30 tCO₂e · ha⁻¹

$c_{B\ BGMT}^{[m2]}$ = Baseline carbon stocks below-ground merchantable trees at the end of the current monitoring period; 35.63 tCO₂e · ha⁻¹

$t^{[m2]}$ = Length of project or logging in baseline scenario; 9,125 days

$x^{[m2]}$ = Covariate values; 0

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio); 0.37

$$E_{B\ AGMT}^{[m2]} = 7,395,725 \text{ tCO}_2\text{e}$$

M3:

$$E_{B\ AGMT}^{[m3]} = BEM_{P1}(c_{P\ AGMT}^{[m=0]} + c_{P\ BGMT}^{[m=0]} + c_{B\ AGMT}^{[m3]} + c_{B\ BGMT}^{[m3]} t^{[m3]}, x^{[m3]})(1 - \frac{r_{RS}}{1 + r_{RS}})$$

Where;

$c_{P\ AGMT}^{[m=0]}$ = Project carbon stocks in above-ground merchantable trees at project start; 99.44 tCO₂e · ha⁻¹

$c_{P\ BGMT}^{[m=0]}$ = Project carbon stocks in below-ground merchantable trees at project start; $36.79\ \text{tCO}_2\text{e} \cdot \text{ha}^{-1}$

$c_{B\ AGMT}^{[m3]}$ = Baseline carbon stocks above-ground merchantable trees at the end of the current monitoring period; $87.72\ \text{tCO}_2\text{e} \cdot \text{ha}^{-1}$

$c_{B\ BGMT}^{[m3]}$ = Baseline carbon stocks below-ground merchantable trees at the end of the current monitoring period; $94.89\ \text{tCO}_2\text{e} \cdot \text{ha}^{-1}$

$t^{[m3]}$ = Length of project or logging in baseline scenario; 9,125 days

$x^{[m3]}$ = Covariate values; 0

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio); 0.37

$$E_{B\ AGMT}^{[m3]} = 11,804,004\ \text{tCO}_2\text{e}$$

M4:

$$E_{B\ AGMT}^{[m4]} = BEM_{P1}(C_{P\ AGMT}^{[m=0]} + c_{P\ BGMT}^{[m=0]} + c_{B\ AGMT}^{[m4]} + c_{B\ BGMT}^{[m4]}, t^{[m4]}, x^{[m4]})(1 - \frac{r_{RS}}{1 + r_{RS}})$$

Where;

$c_{P\ AGMT}^{[m=0]}$ = Project carbon stocks in above-ground merchantable trees at project start; $99.44\ \text{tCO}_2\text{e} \cdot \text{ha}^{-1}$

$c_{P\ BGMT}^{[m=0]}$ = Project carbon stocks in below-ground merchantable trees at project start; $36.79\ \text{tCO}_2\text{e} \cdot \text{ha}^{-1}$

$c_{B\ AGMT}^{[m4]}$ = Baseline carbon stocks above-ground merchantable trees at the end of the current monitoring period; $87.72\ \text{tCO}_2\text{e} \cdot \text{ha}^{-1}$

$c_{B\ BGMT}^{[m4]}$ = Baseline carbon stocks below-ground merchantable trees at the end of the current monitoring period; $32.45\ \text{tCO}_2\text{e} \cdot \text{ha}^{-1}$

$t^{[m0]}$ = Length of project or logging in baseline scenario; 9,125 days

$x^{[m4]}$ = Covariate values; 0

r_{RS} = Expansion factor for above-ground biomass / below-ground biomass (root/shoot ratio); 0.37

$$E_{B\ AGMT}^{[m4]} = 11,724,722\ \text{tCO}_2\text{e}$$

3.2.1.7 Determining Carbon Stored in Long Lived Wood Products

MRR.36 Carbon stored in long-lived wood products $C_{B\ WP}^{[m]}$ after 100 years.

Please refer to Annex 13 – MNRP NER Worksheet.

Carbon in wood products remaining after 100 years was derived from Winjum et al. (1998):

$$C_{B\ WP}^{[m5]} = 966,664\ \text{tCO}_2\text{e}$$

MRR.37 Calculations to determine $C_{B\ WP}^{[m]}$.

Please refer to Annex 13 – MNRP NER Worksheet.

Determining carbon stored in wood products in the project $C_{BWP}^{[m]}$ is calculated using equation [C.1] of the VCS Methodology VM0009 V2.0, which was derived from Winjum et al. (1998):

$$C_{BWP}^{[m5]} = (1 - w) (E_{BAGMT}^{[m5]}) \sum_{ty \in T} p_{ty}^{[m5]} l_{ty} (1 - f_{ty})^{95}$$

Where;

$C_{BWP}^{[m5]}$ = tCO₂e sequestered in long-lived wood products after 100 years; 966,664 tCO₂e

w = milling wood waste function; 0.24

ty = wood product type; sawn wood

$E_{BAGMT}^{[m5]}$ = Cumulative emissions in above-ground merchantable trees; 11,915,084 tCO₂e

$p_{ty}^{[m5]}$ = portion of harvested carbon in product type ty (estimated using Appendix B); 0.0909

l_{ty} = fraction of wood products in product type ty after five years; 0.8

f_{ty} = annual oxidation fraction of wood products in product type ty ; 0.02

3.2.2 Project Emissions (VCS, 3.15)

Carbon stocks have been estimated using the Verified Carbon Standard (VCS) methodology VM0009 'Methodology for Avoided Ecosystem Conversion' v2.0.

For this 5th monitoring period, which extends from 1 January 2022 to 31 December 2022, we measured 55 plots, representing 33.1% of the 163 plots. Biomass plot locations measured for M5 are depicted below in Figure 3.1: Biomass sample plot locations for the fifth monitoring period (M5) in The Lac Mai Ndombe REDD+ Project.

Changes in project carbon stocks are calculated as the difference in project stocks in each stratum for each PAA between the current and prior monitoring periods, as determined from in-situ measurement of biomass plots:

$$A_{PAA} (c_P^{[m5-1]} - c_P^{[m5]})$$

Carbon stocks that are lost to burning, wood products, and leakage are accounted for using the procedures and equations listed below.

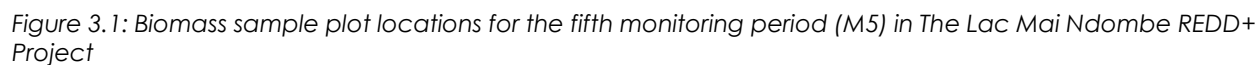


Table 3-5 depicts current measured above- and below-ground biomass carbon stocks by land

cover stratum and Table 3-6 the soil carbon stocks by PAA within the Project Area. Values below have been calculated using the methods of carbon accounting detailed in the VCS Methodology VM0009 V2.0 and this Project's VCS / CCB validated PD.

Table 3-5: Summary of current carbon stocks within the Project Accounting Area (PAA)

Stratum	Area (ha)	Mean carbon stock (t CO ₂ e / ha)	Standard error (t CO ₂ e / ha)	Mean dbh (cm)	Average height (m)
Semi-deciduous forest, Logged FORESCOM	55,244.75	1,058.15	88.34	32.15	N/A
Semi-deciduous forest, Logged SOFORMA	23,205.02	868.99	102.12	25.59	N/A
Semi-deciduous forest, Unlogged	49,476.66	635.69	90.75	25.79	N/A
Swamp Forest	121,030.00	895.76	44.29	23.70	N/A

Table 3-6: Summary of current soil carbon stocks within the Project Accounting Area (PAA)

PAA	Soil accounting area (ha)	Mean carbon stock (t CO ₂ e/ ha)	Standard error (t CO ₂ e / ha)
Accounting Area	248,956.43	61.0	N/A

3.2.2.1 Calculating Emissions from Burning

Currently, no planned project activities involve the burning of biomass burning in any manner. As such, emissions from burning are not currently included in carbon accounting. However, if future Project Activities should include this emission type, project emissions from burning of biomass shall be calculated using equation [F.42] of the VM0009 V2.0 methodology.

3.2.2.2 Calculating Emissions from Disturbances

Forest loss from small-scale anthropogenic disturbances exceeded the de minimis value (250 ha) of contiguous forest loss in the project monitoring plan as defined in the project monitoring plan. To accurately capture and account for emissions from deforestation, the project

voluntarily opted to utilize Global Forest Watch (GFW) v1.10¹⁸ data for the monitoring period, specifically the year of gross forest cover loss event captured in the “loss-year” raster.

This raster shows global forest loss from 2000–2022, defined as a stand-replacement disturbance, or a shift from forest to non-forest. The raster layer is symbolized as either 0 (no loss) or a range from 1–22, representing loss detected for each year between 2001–2022. We downloaded the appropriate deforestation tile from GFW, extracted the raster cells for the M5 monitoring period year of concern (2022) and clipped the raster to the PAA boundary. The final map was then derived and used to calculate the deforested areas across the entire PAA (Figure 3.2). The extent of deforestation was ascertained from calculating the product of pixel count and pixel area within the PAA. To determine the area of deforestation that occurred on peat soil, the peat maps produced by Bwangoy et al. (2010) were used to map the extent of peat in the PAA. The mapped deforestation was clipped to the peat map to calculate the area deforestation that occurred on peat and in mineral soil (Figure 3.3). This analysis requires both a PD deviation, which is detailed in section 2.2.5.

To assess the accuracy of the disturbance maps, an accuracy estimation procedure following standard practices described in Olofsson et al. (2014)¹⁹, was implemented with the goal of estimating omission and commission errors, and user’s, producer’s, and overall accuracy metrics. Our user’s accuracy was 74.1% for deforested plots and 100.0% for non-deforested plots, and our producer’s accuracy results were 100.0% for deforestation and 99.9% for non-deforestation in 2022. Overall accuracy is calculated from the total area proportions of correctly identified deforested (0.28%) and non-deforested (99.72%) plots, summing to 99.9%. Full details on the accuracy estimation procedure have been provided to the VVB in supplemental material.

3.2.2.3 Emissions Calculation

Emissions for the M5 monitoring period within the PAA were calculated by multiplying the deforested pixels per strata depicted below in Figure 3.2 by the Project emission factors. To calculate the emissions from peat soil due to deforestation, the area of forest loss on peatland was multiplied by an emission factor for cleared forestland from the IPCC 2006 National

¹⁸ Hansen M. C., Potapov Peter, Moore R., Hancher M., Turubanova Svetlana, Tyukavina Alexandra, Thau D., Stehman Stephen, Goetz Scott, Loveland Thomas, Kommareddy Anil, Egorov Alexey, Chini L., Justice C. O., and Townshend J.. 2013. High-Resolution global maps of 21st-century forest cover change. *Science* 342, 6160 (2013), 850–853

¹⁹ Olofsson, et al. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment* 148, 42-57. DOI: 10.1016/j.rse.2014.02.015

Greenhouse Gas Inventories (IPCC 2013)²⁰. This emission factor is from the 2013 Supplement to the 2006 IPCC Guidelines for the National Greenhouse Gas Inventories: Chapter 2 Wetlands. It was used to calculate the resulting emissions from the peat soil. This emission factor is for cleared forestland that is drained. As in this region it is not common practice to drain peatlands, this emission factor is conservative in nature. The emission factor used to calculate the emissions from peat is 19.44 t CO₂e/HA/yr. Table 3-7 below shows calculation of emissions for the year representing M5.

Table 3-7: Project Emissions for M5

Time Period	Total Area of Forest Loss (ha)	Area of Forest Loss – Minneral Peat (ha)	Area of Forest Loss – Minneral Soil (ha)	Emission From Deforestation (tCO ₂ e)	Emission From Peat Soil Due To Deforestation (tCO ₂ e)	Total Project Emission (tCO ₂ e)
2022	952.62	202.39	749.23	607,325.18	3,952.90	611,278.09
Total M5 (2022)	952.62	202.39	749.23	607,325.18	3,952.90	611,278.09

*Under the requirements of the methodology and VCS standard this value is to be rounded up to 611,279 t CO₂e

²⁰ IPCC 2013 Supplement to the 2006 IPCC Guidelines for the National Greenhouse Gas Inventories: Chapter 2 Wetlands



Mai Ndombe M5 Disturbance Monitoring

Total deforestation in 2022 (GFC): **952.62 ha**

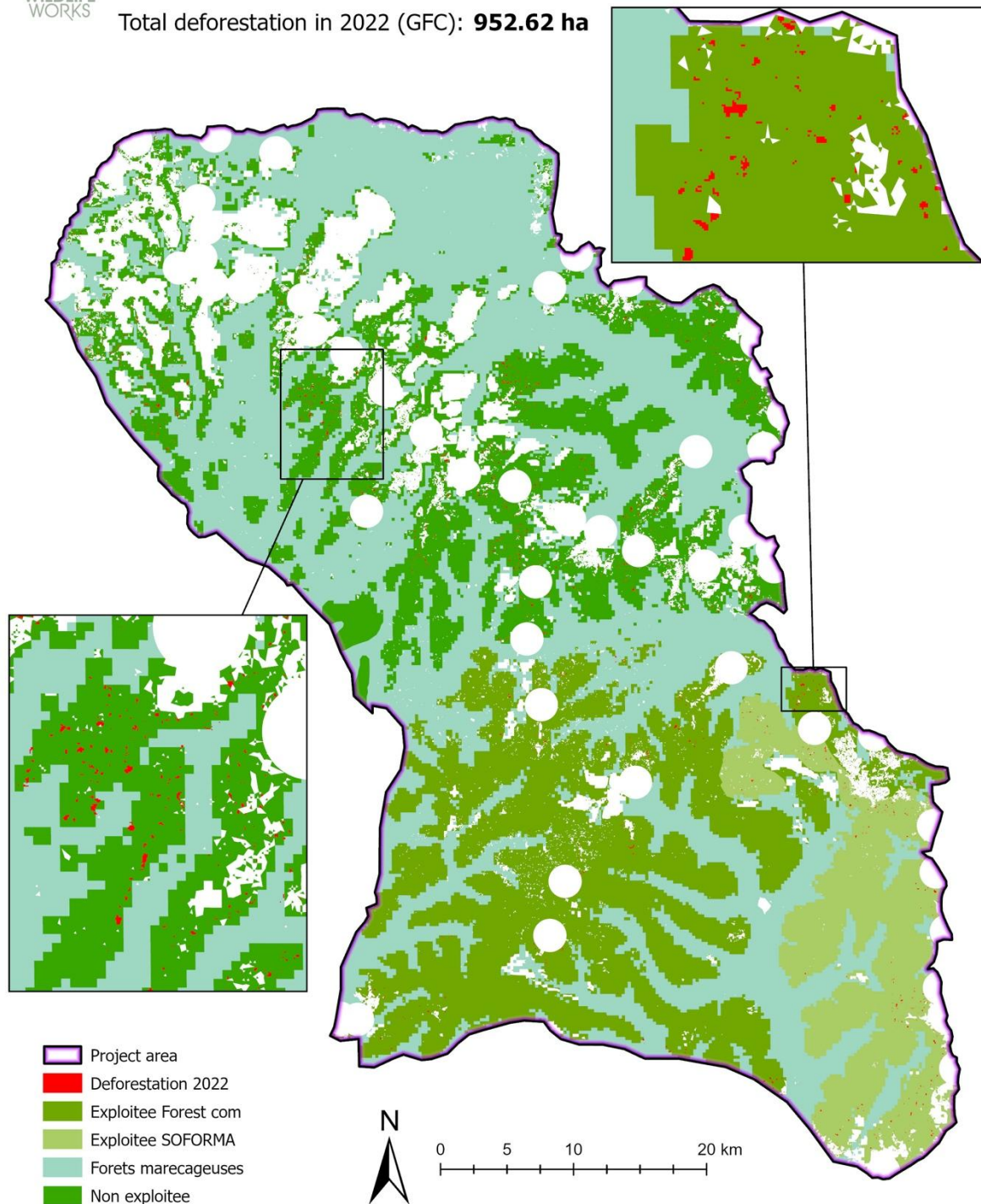


Figure 3.2: 2022 Landcover for the Mai Ndombe REDD+ Project Accounting Area showing areas of deforestation.

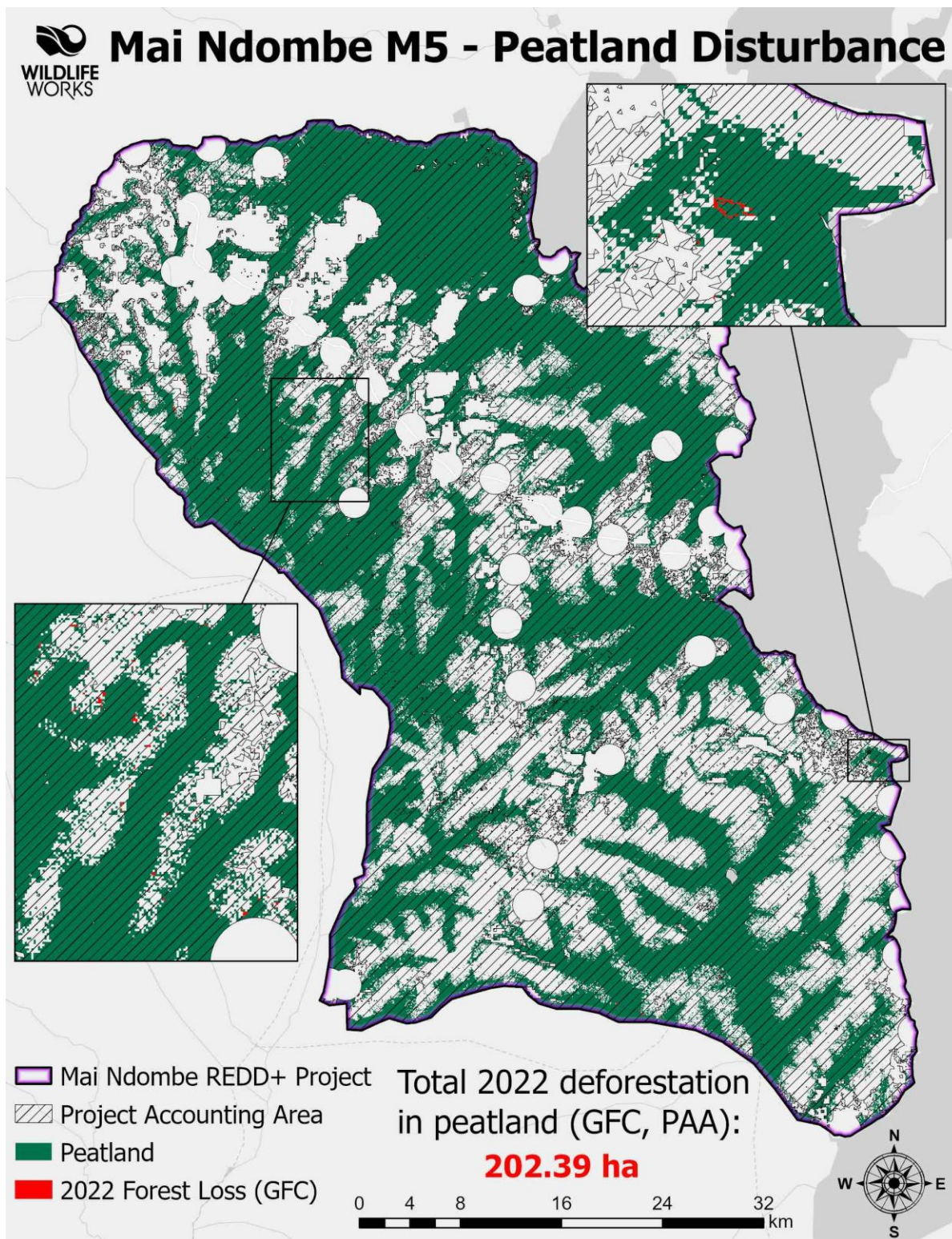


Figure 3.3: Areas of peat soil in the PAA as determined by Bwangoy et al. (2010) with areas of deforestation that occurred within the peat areas shown.

3.2.3 Leakage Emissions (VCS, 2.5, 3.2, 3.6, 3.15, 4.3)

3.2.3.1 Activity Shifting Leakage

As discussed in section 3.3.1 of the MNRP VCS PD, activity shifting leakage is not applicable to this project. In the context of the project's baseline scenario, activity-shifting leakage would apply to the secondary agents of deforestation, which is comprised of members of communities located within or near the project area and the extent to which there are alternative, accessible forested areas within the range of their mobility. Without access to the project area that would have been provided through the logging infrastructure and removal of large trees in the baseline scenario, it is possible that secondary agents could be displaced to other forested areas within the range of their mobility (up to 25 km per section 2.4.1 of the PD). However, as the forests surrounding the project area have not and are not currently being logged and do not have any existing logging infrastructure, the forests adjacent to the project area are not considered to be accessible within the range of mobility of the secondary agents. Therefore, these agents are unable shift their deforestation activity to nearby forests, and activity-shifting leakage would not occur. Please refer to the VCS PD for more information.

During this M5 monitoring period, Verra requested that the project determine whether there was any activity-shifting leakage in forested community areas that are within the Project Area, but outside of the Project Accounting Area. This analysis requires both a methodology and PD deviations, which are detailed in sections 2.2.3 and 2.2.4, respectively. For the current M5 monitoring period, due to the determination that there is peat soil present in the PA, the emissions occurring from peat soil due to deforestation have been included in the activity-shifting leakage emission calculation. This analysis requires a PD deviation, which is detailed in section 2.2.5. This was calculated by clipping the area of forest loss for 2022 to the peat soil layer from Bwangoy et al (2010). An emissions factor from the 2013 Supplement to the 2006 IPCC Guidelines for the National Greenhouse Gas Inventories: Chapter 2 Wetlands was then used to calculate the resulting emissions from the peat soil. This emission factor is for cleared forestland that is drained. In this region, it is not common practice to drain peatlands, so this emission factor is conservative in nature. The baseline for the activity-shifting leakage area was not revised to include any emissions from peat, therefore this is a conservative assumption to only include emissions from peat in the project period. The monitoring report requirements from the methodology MRR.44 to MRR.59 are not applicable to the project due to these deviations in the calculation of project leakage. This analysis and the resulting project emission is detailed below.

3.2.3.2 Calculating Emissions from Deforestation within the Project Area but Outside of the Project Accounting Area

During this M5 monitoring period Verra requested that the project ensure that there has not been leakage from the PAA into forested areas that are outside of the PAA, and therefore not included in project carbon accounting, but inside of the Project Area. These areas were excluded from the PAA as they were designated for community use under the Cahier de Charge and DRC forest law as stated in the VCS PD Section 1.9.1. As this activity-shifting leakage is

being analyzed for the first time during this monitoring period there was not a baseline of deforestation in the area of interest or established procedure to use. Additionally, this area does not meet the requirements of the methodology VM0009 as documented in Section 2.2.3. Therefore, to comply with Verra's request a new procedure, documented below, was developed to establish a baseline deforestation rate and measure 2022 emissions for this area of interest.

Based on Verra's request we performed a geospatial analysis in ArcGIS Pro to approximate activity-shifting patterns within the project area but outside the project accounting area. This analysis was performed using tree cover data from Global Forest Change, a stratified landcover dataset provided by the DRC Ministry of the Environment, and activity data (loss year) from Global Forest Change.

Process

Study Area

We performed this analysis for areas that are within the MNRP Project Area, but not contained within the project's Project Accounting Area (the areas of forest included in carbon accounting within the project area) as documented in the VCS PD. Based on the Project's agreements with communities in the Cahier de Charge document and DRC forest law villages within the project area were identified and a 1,200-meter circular buffer was placed around each village center. The village and the 1,200 meter circular buffer were then excised from the PAA. The excised area also included pockets of simplified polygons that were identified as non-forest under an older land cover dataset and subsequently excluded from the project accounting area.

Deforestation by Year

To define forest loss using Global Forest Change, we identified reductions in canopy cover within areas identified as forest under the DRC's national forest definition (30% minimum canopy cover). We used activity data ("loss year") and tree cover data from Global Forest Change (GFC) datasets. These datasets describe tree cover observed in the year 2000 and reductions in canopy cover observed from the years 2001 to 2022. We subset tree cover data to 30% or greater canopy cover to identify forested areas in 2000, and subset loss data to contiguous areas of 8100 meters or greater to identify concentrated areas of forest loss. We then intersected and clipped these layers to identify areas of deforestation in the study area since the year 2000, organized annually.

Deforestation by Forest Stratum

To identify forest and non-forest classes, we used a national stratified land cover dataset for the DRC with eight classes: "wet dense forest on land", "wet dense forest on hydromorphic soil", "secondary forest", "savannah", "perennial culture", "water", and "agglomeration".

We restricted this dataset to two classes that were identified as forest to be conserved: “wet dense forest on land” and “wet dense forest on hydromorphic soil”. We then intersected areas of deforestation in the study area since the year 2000 with these forest strata to identify areas of deforestation within each type of forest, organized annually.

Activity-Shifting Leakage Emission Calculation

The activity-shifting leakage area baseline was established for the areas of interest by averaging annual forest loss observed in the area of interest during a historical reference period. The historical reference period was established as the ten-year period prior to the start of the MNRP, 2001-2010. A ten-year period was chosen as ten years has become the most commonly used temporal period for reference periods and due to data availability as Global Forest Change only contains data to the year 2000. Emissions from deforestation within the area of interest were measured for each year of the historical reference period and then averaged to calculate a leakage reference emission level. The total emissions from deforestation in the activity-shifting leakage area during the reference period (2001-2010) as reported by Global Forest Watch were seen to be 658,856.34 t CO₂e, for an average annual emission of 65,885.63, which was set as the baseline. Emissions from deforestation were then measured in the area of interest for the year 2022, the monitoring period covered by this report, by analyzing change for the period 2022-2023. The total emissions from deforestation in the activity-shifting leakage area during the monitoring period (2022) as reported by Global Forest Watch were seen to be 139,424.08 t CO₂e. Leakage was then considered to be any emissions from deforestation within the area of interest above the leakage reference emission level. The area of deforestation was then intersected with the peat map as produced by Bwangoy et al. (2010) to determine the area of deforestation on peat soil (Figure 3.4). To calculate the emissions from peat soil due to deforestation, the area of forest loss on peatland was multiplied by an emission factor for cleared forestland from the IPCC 2006 National Greenhouse Gas Inventories (IPCC 2013). The emission factor used to calculate the emissions from peat is 19.44 t CO₂e/HA/yr. Table 3-7 below shows calculation of emissions for the year representing M5. Emissions from peat soil are not included in the baseline for the leakage area. The total emissions from peat soil due to deforestation in the activity-shifting leakage area during the monitoring period (2022) is 533.88 tCO₂e.

Activity-Shifting Leakage is calculated using the equation:

Emissions from Deforestation - Leakage Reference Level = Emissions from Leakage

$$139,957.97 \text{ t CO}_2\text{e} - 65,885.63 \text{ t CO}_2\text{e} = 74,072.34 \text{ t CO}_2\text{e}$$

Any positive values calculated by this equation are considered activity-shifting leakage, whereas negative values would show no leakage. But there cannot be negative leakage under the methodology, so negative values would be set to zero leakage.

For 2022 it was determined that there were emissions from activity-shifting leakage of 74,072.34 t CO₂e.

Table 3-8. Measurement of emissions from deforestation within the MNRP Project Area, but outside of the project's Project Accounting Area

Parameter	Value (t CO ₂ e)
Leakage Reference Emission Level	65,885.63
Emissions from Deforestation in 2022	139,957.97
Emissions from Leakage	74,072.34*

*Under the requirements of the methodology and VCS standard this value is to be rounded up to 74,073 t CO₂e

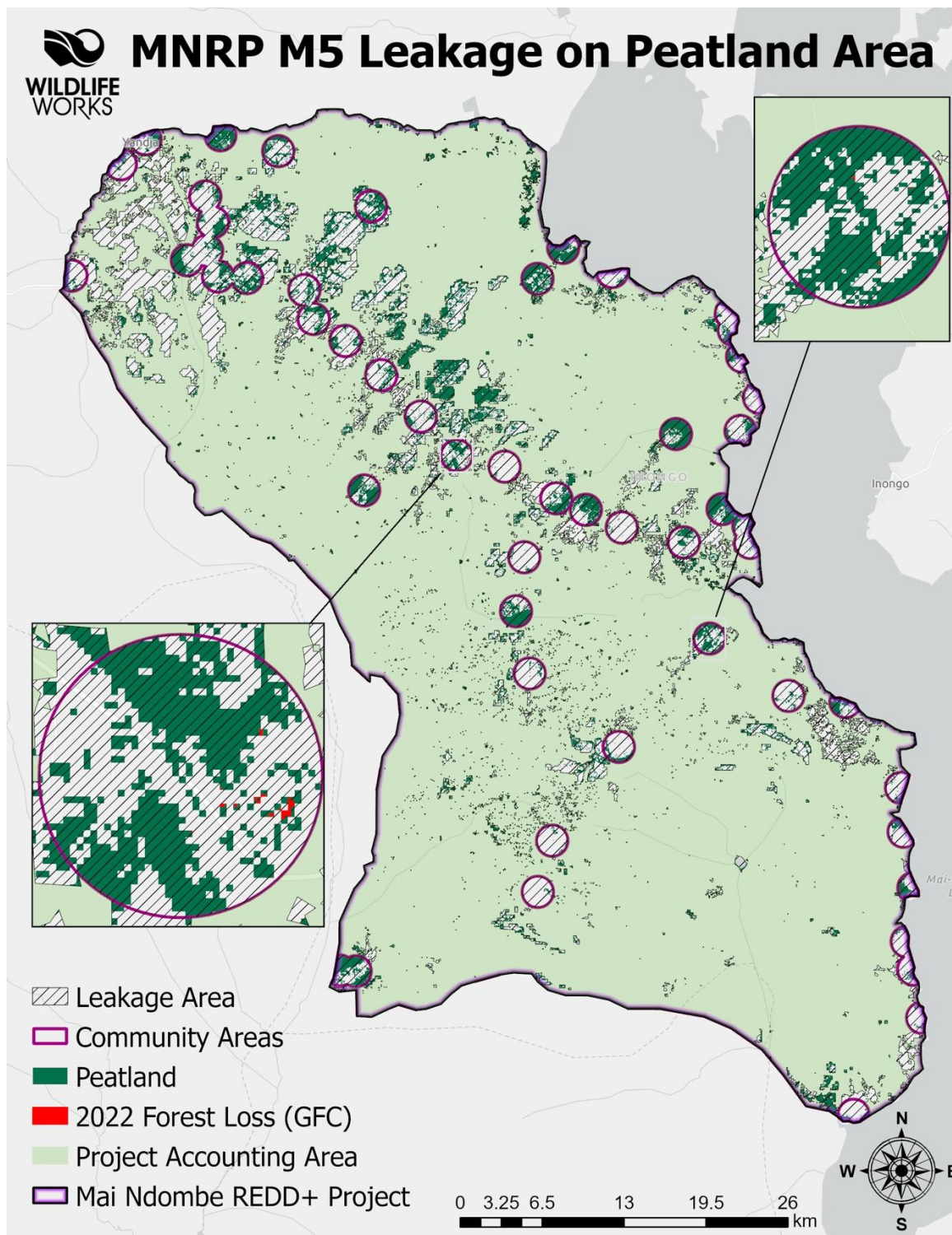


Figure 3.4: Area of forestloss in the activity-shifting leakage area that occurred on peat soil according to the peat map from Bwangoy et al. (2010).

3.2.3.3 Market Leakage (CL3.1)

As discussed in section 3.3.2 of the MNRP VCS PD market leakage is not applicable to this project. Please refer to the VCS PD for more information.

3.2.4 GHG Emission Reductions and Carbon Dioxide Removals (VCS, 3.15, 4.1)

State the non-permanence risk rating (%)	16%
Has the non-permanence risk report been attached as either an appendix or a separate document?	☒ Yes ☐ No
For ARR and IFM projects with harvesting, state, in tCO ₂ e, the Long-term Average (LTA).	The MNRP is a REDD+ project. Therefore, the LTA is non-applicable.
Has the LTA been updated based on monitored data, if applicable?	☐ Yes ☒ No The MNRP is a REDD+ project. Therefore, the LTA is non-applicable.
State, in tCO ₂ e, the expected total GHG benefit to date.	63,383,866
If a loss occurred (including a loss event or reversal), state the amount of tCO ₂ e lost:	611,279

3.2.4.1 Determining Reversals

MRR.65 A description of the reversal including which pools contributed to the reversal and reasons for its occurrence.

There have been no reversals in the MNRP during the M5 monitoring period.

3.2.4.2 Determining Reversals as a Result of Baseline Re-evaluation

MRR.66 A description of the reversal including a summary of new data obtained in the reference area.

There have been no reversals in the MNRP during the M5 monitoring period and the next baseline re-evaluation period will be for M6 (2023).

In the event that a reversal occurs due to a baseline re-evaluation, the project proponent shall document the cause of reversal, quantify the emissions from the reversal and supply all supporting data for the in the respective monitoring report, following all guidance and requirements from section 8.4.2.1 in the VCS methodology VM0009 v3.0.

3.2.4.3 Determining Leakage Deductions

Leakage resulting from the project activity, including market and activity-shifting leakage, is quantified using the methods and equations included in section 3.2.3. Equation [F.45] is then used to determine the cumulative emissions from leakage, both market and activity-shifting.

$$E_L^{[m]} = E_{L\text{ASF}}^{[m]} + E_{L\text{ASG}}^{[m]} + E_{L\text{LME}}^{[m]}$$

For the MNRP project in the fifth monitoring period this equation is parameterized as:

$$E_L^{[m]} = 74,073 = 74,073 + 0 + 0$$

The MNRP does not include a grassland stratum or PAA, therefore the term $E_{L\text{ASG}}^{[m]}$ has been set to zero.

Equation [F.44] is then used to determine the total emissions from leakage for the current monitoring period.

$$E_{L\Delta}^{[m]} = E_L^{[m]} - E_L^{[m-1]}$$

For the MNRP project in the fifth monitoring period this equation is parameterized as:

$$E_{L\Delta}^{[m]} = 74,073 = 74,073 - 0$$

3.2.4.4 Quantifying Net Emission Reductions for a PAA

3.2.4.4.1 Determining Deductions for Uncertainty

MRR.61 The confidence deduction $E_U^{[m]}$ and estimated standard errors used to determine the confidence deduction.

In accordance with VM0009 V2.0, section 8.4.1.1, the confidence deduction is determined by linearly combining weighted uncertainties (standard errors) from the project accounting area, proxy area and the baseline emission model (BEM). Per VCS AFOLU Requirements, if the total combined error is above 15%, a deduction is applied as the difference between the calculated combined error and 15%. Otherwise, the confidence deduction is zero. The calculated standard errors used for the determination of the confidence deduction were:

Uncertainty in carbon stock estimates in the project accounting area, ($U_P^{[m5]}$): 35.55 tCO₂e

Uncertainty in carbon stock estimates in the proxy area, ($U_B^{[m0]}$): 15.62 tCO₂e

Uncertainty in the baseline emissions model (BEM), ($U_{EM}^{[m5]}$): 0.009 tCO₂e

For m5, the confidence deduction, as per VM0009 V2.0 equation [F.51] was:

Cumulative confidence deduction, $E_U^{[m5]}$: 0 tCO₂e

MRR.62 Reference to calculations used to determine the confidence deduction.

The cumulative confidence deduction, $E_U^{[m5]}$, was calculated using VM0009 V2.0 equation [F.51]:

$$E_U^{[m5]} = E_{B\Delta}^{[m5]} \left[\frac{1.64}{E_{B\Delta}^{[m5]} + A_{PAA}c_P^{[m5]} + A_{PX}c_B^{[m5]}} \sqrt{\left(U_{EM}^{[M5]}\right)^2 + \left(U_P^{[m5]}\right)^2 + \left(U_B^{[m5]}\right)^2} - 0.15 \right]$$

where:

$c_P^{[m]}$ is total measured carbon stock in the project accounting area; 218,487,678.3 tCO₂e · ha-1

$c_B^{[m]}$ = total proxy area carbon stock; 100.64 tCO₂e · ha-1

$E_{B\Delta}^{[m5]}$ = total change in proxy area emissions; 0 tCO₂e

$U_{EM}^{[M]}$ = the total uncertainty for the baseline emissions model (BEM); 0.009 tCO₂e

$U_P^{[m]}$ = the total uncertainty in the project accounting area; 35.55 tCO₂e

$U_B^{[m]}$ = the total uncertainty in the proxy area; 15.62 tCO₂e

A_{PAA} = the area of the project accounting area, 248,956 ha

A_{PX} = the area of the proxy area; 29,361.2 ha

All reference calculations can be found in the PAA and Proxy Area Carbon Inventory worksheets.

3.2.4.4.2 Quantifying Gross Emission Reductions for a PAA

MRR.58 Quantified GERs for the current monitoring period including references to calculations.

Please refer to Table 3-5, Annex 13 – MNRP NER Worksheet.

MRR.59 Quantified GERs for the prior monitoring period including references to calculations.

Please refer to Table 3.7, Annex 13 – MNRP NER Worksheet.

MRR.60 A graph of GERs by monitoring period for all monitoring periods to date.

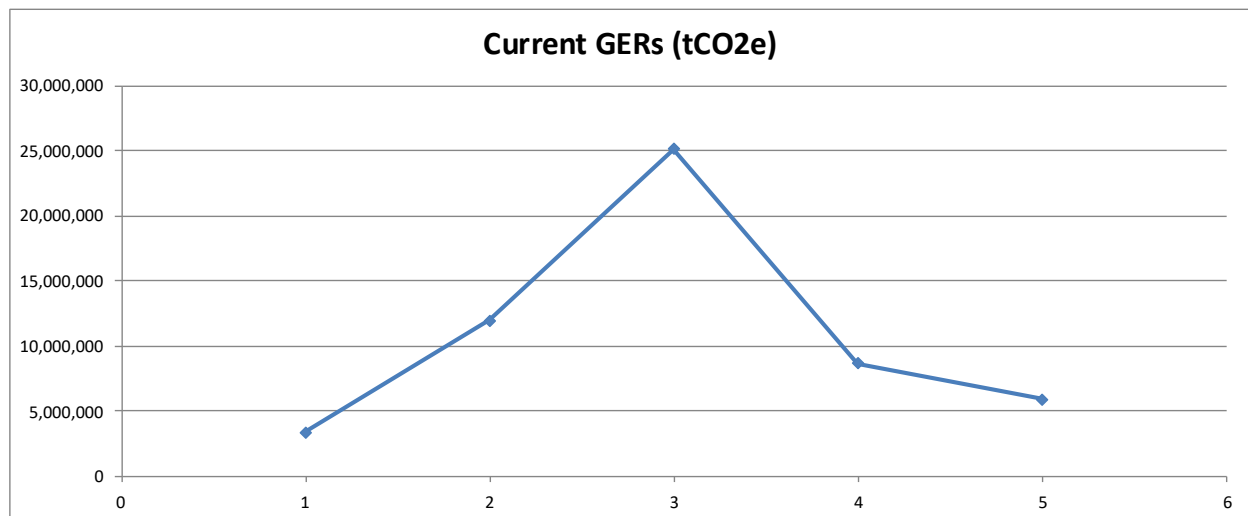


Figure 3.5. Total GERs for M1-M5.

3.2.4.4.3 Determining Buffer Account Allocation

MRR.70 Reference to the VCS requirements used to determine the buffer account allocation.

The buffer account allocation for the MNRP is calculated according to the requirements stated in the VCS Standard Version 4.4, VCS Registration and Issuance Process Version 3.4, and the VCS Non-Permanence Risk Tool Version 4.2

For M5, the non-permanence risk score is 16%, changing from 10% in M4 - M2. This change is due to VERRA's new, web-based non permanence risk tool. In this new tool, risk scores are calculated with slightly different measurements. The score was 25% in M1, with the change in score mainly due to the increased community engagement achieved during M2, as the MNRP has now been able to consult with more than 50% of households with the project area who are reliant on the project. This resulted in a change in score for total community engagement from 10 to -5. Total external risk, which includes total community engagement, therefore dropped from 14 to 0. There was also a more modest drop in the total internal risk category due to a change in the project proponent's financial viability, which resulted in the calculated financial break-even point being closer in time to the current risk assessment (see justification details in the MNRP non-permanence risk report) and also the implementation of an adaptive management plan (SBIA / causal model) during M2.

MRR.71 Reference to calculations used to determine the buffer account allocation.

The non-permanence risk score is calculated using the non-permanence risk tool v4.2 (see Annex 23 – Non-Permanence Risk Tool) which combines risk ratings for internal risk, external risk and natural risk. Risk ratings per category were calculated as follows:

Internal Risk

Project Management: 0

Financial Viability: 0

Opportunity Cost: 8

Project Longevity: 0

Total Internal Risk: 8

External Risks

Land Tenure and Resource Access/Impacts: 0

Stakeholder Engagement: 0

Political Risk: 4

Total External Risk: 4

Natural Risks

Natural Risk Associated with Climate Change Impact: 2.24

Natural Risk Not Associated with Climate Change Impact: 1.0

Total Natural Risk: 3.24

Overall Risk Rating: 16 (The sum of the above scores is 15.24, but the risk rating is rounded up to the nearest whole percentage of 16)

Per VCS Registration and Issuance Process v3.4, the percentage of emission reductions equal to the overall risk rating shall be deducted from net calculated emission reductions and placed in the non-permanence buffer pool. As such, for m5, the overall buffer credits were calculated to be 16% of gross emission reductions, 5,707,477 tCO₂e:

Overall M5 risk of reversal buffer contribution: -925,048 tCO₂e

Please refer to Annex 13 – MNRP NER Worksheet for calculation details.

3.2.4.4.4 Net Emission Reductions for a PAA

MRR.67 Quantified NERs for the current monitoring period including references to calculations.

Annual net emission reductions (NERs) for the Project are calculated for each PAA by subtracting the VCS buffer pool allocation from GERs using equation [F.55] from the methodology VM0009 v3.0:

$$E_{\Delta NER}^{[m]} = E_{\Delta GER}^{[m]} - E_{BA}^{[m]}$$

Where:

$E_{\Delta NER}^{[m5]}$ = NERs for the monitoring period; tCO₂e

$E_{\Delta GER}^{[m5]}$ = GERs for the monitoring period; tCO₂e

$E_{BA}^{[m5]}$ = Cumulative emissions allocated to the buffer account at the end of the current monitoring period; tCO₂e

Where:

$$4,782,428 \text{ tCO}_2\text{e} = 5,707,477 - 925,048$$

NERs for the current monitoring period (M5) are 4,782,428 tCO₂e. Calculations can be found in Mai Ndombe M5_v1.xlsx.

Table 3-9. The GHG reductions, Project Emissions, Leakage Emissions and Net Emission Reductions (NERs) for the monitoring period under the validated project baseline for M5

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Buffer pool allocation (tCO ₂ e)	Reductions VCU (tCO ₂ e)	Removals VCU (tCO ₂ e)
01-Jan-2022 to 31-Dec-2022	6,392,829	611,279	74,073	925,048	4,782,428	0
Total	6,392,829	611,279	74,073	925,048	4,782,428	0

Table 3.9 represents net emission reductions calculated using the current VCS-approved standalone project baseline, which the project must use until the end of the current baseline validity period. However, as the MNRP is nested into the FCPF ER Program, Wildlife Works has voluntarily agreed to cap VCU issuance at the nested ER Program level. Table 3.10 indicates NER calculations per this decision. The Project will issue VCUs in accordance with Table 3.10.

Table 3-10: GHG reductions, Project Emissions, Leakage Emissions and Net Emission Reductions (NERs) using the FCPF ER program nested forest reference emission level (FREL)

Vintage period	Project Forest Reference Emission Level (FREL) (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Buffer pool allocation (tCO ₂ e)	Reductions VCU (tCO ₂ e)	Removals VCU (tCO ₂ e)
01-Jan-2022 to 31-Dec-2022	3,800,000	611,279	74,073	510,196	2,604,452	0
Total	3,800,000	611,279	74,073	510,196	2,604,452	0

During this M5 monitoring period, Verra requested that WWC demonstrate that crediting under the FCPF nested baseline remains conservative given the presence of peatland within the PAA. This demonstration was requested due to uncertainty regarding the applicability of the validated baseline and baseline scenario to peatland areas.

This analysis was performed solely for the purpose of demonstrating conservativeness and does not constitute an updated baseline. The analysis has no bearing on the calculation of project emission reductions, which continue to be determined using the validated FCPF allocated baseline of 3,800,000 tCO₂e/year.

To conduct this demonstration, the PAA and reference area were stratified into wetland and terra firma areas using the wetland probability map of Bwangoy et al. (2010)²¹, with the assumption that areas mapped as wetland ($P > 49$) contain peat soils. Based on this stratification, the BEM sample grid used for validation (reference area) and biomass inventory data (PAA and proxy areas) were separated into the two strata and 2 separate baselines were calculated accordingly. No new historic points were collected, and the locations of the validated BEM grid samples and biomass plots were not modified.

For the purposes of this exercise only, the terra firma area utilized the validated F-P1 (APD Planned deforestation with cascade) BEM type, while the wetland area utilized an F-U3 (AUD Unplanned frontier deforestation) BEM type. Separate crediting (NER) models were developed for the terra firm and wetland areas, with separate logistic parameters (alpha, beta) determined for each BEM, and separate carbon stocks measured in the PAA and proxy area for each strata. At Verra's direction, an 85% discount factor was applied to the beta parameter of the wetland BEM to account for Verra's determination that the validated project reference area does not meet methodological requirements for AUD baselines. This discount factor was calculated by Verra based on the measured difference between deforestation rates in wetland portions of the reference area and Mai Ndombe Province between 2000-2024.

The results of this analysis confirmed that the FCPF nested baseline of 3,800,000 tCO₂e/year utilized by the project for the calculation of emission reductions is conservative, as it remains below the combined and discounted VM0009 baseline even under this conservative comparison framework.

MRR.68 Quantified NERs for the prior monitoring period.

Annual net emission reductions (NERs) for the Project are calculated for each PAA by subtracting the VCS buffer pool allocation from GERs using equation [F.55] from the methodology VM0009 v3.0:

$$E_{\Delta NER}^{[m]} = E_{\Delta GER}^{[m]} - E_{BA}^{[m]}$$

Where:

$E_{\Delta NER}^{[m4]}$ = NERs for the monitoring period; tCO₂e

²¹ Bwangoy, Jean-Robert B., Matthew C. Hansen, David P. Roy, Gianfranco De Grandi, Christopher O. Justice. 2010. Wetland mapping in the Congo Basin using optical and radar remotely sensed data and derived topographical indices. *Remote Sensing of Environment* Vol. 114, Iss 1 (15 January 2010) pg 73-86

$E_{\Delta GER}^{[m4]}$ = GERS for the monitoring period; tCO₂e

$E_{BA}^{[m4]}$ = Cumulative emissions allocated to the buffer account at the end of the past monitoring period; tCO₂e

Where:

$$7,753,754 \text{ tCO}_2\text{e} = 8,615,284 - 861,529$$

NERs for the past monitoring period (M4) are 7,753,754 tCO₂e. Calculations can be found in Mai Ndombe M5_v1.xlsx.

Table 3-11. Net GHG emission reductions for the MNRP during the fourth monitoring period.

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Buffer pool allocation (tCO ₂ e)	Reductions VCU (tCO ₂ e)	Removals VCU (tCO ₂ e)
01-Jan-2021 to 31-Dec-2021	6,120,102	573,111	0	861,529	7,753,754	0
Total	6,120,102	573,111	0	861,529	7,753,754	0

MRR.69 A graph of NERs by monitoring period for all monitoring periods to date.

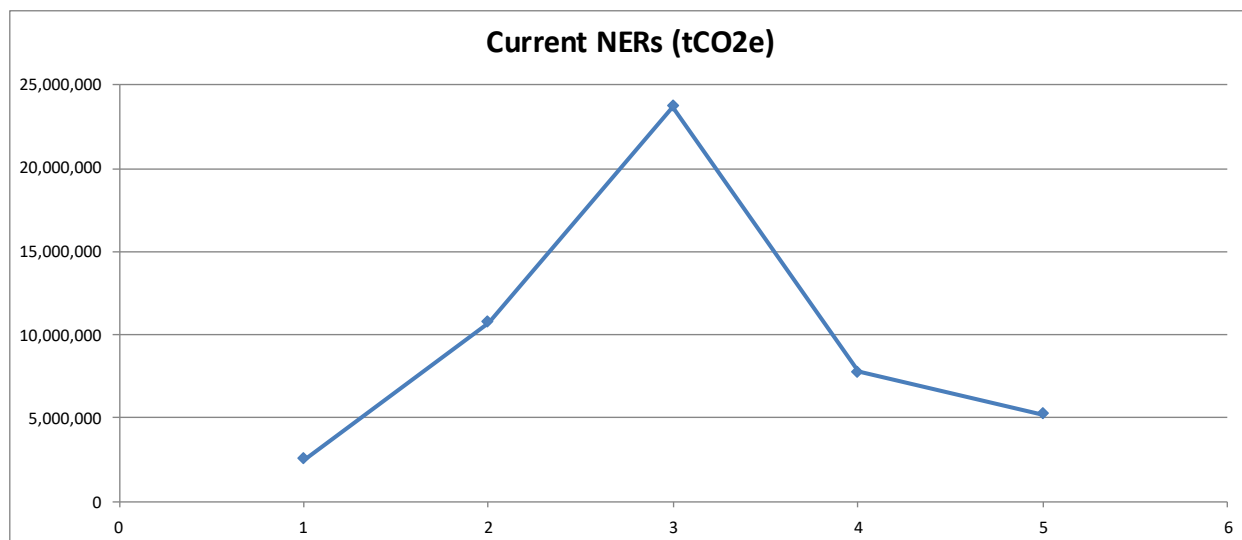


Figure 3.6. Total NERs for past monitoring periods and the current monitoring period, M5

3.2.4.5 Quantifying Net Emission Reductions Across PAAs (CCB V3, CL1.1; CCB V2, CL4.1)

MRR.67 Quantified NERs for the current monitoring period including references to calculations.

As there is one PAA for the MNRP, this MRR does not apply.

MRR.68 Quantified NERs for the prior monitoring period.

As there is one PAA for the MNRP, this MRR does not apply.

MRR.69 A graph of NERs by monitoring period for all monitoring periods to date.

As there is one PAA for the MNRP, this MRR does not apply.

3.2.4.6 Ex-Ante Estimation of NERs (CCB V3, CL1.2 & 1.4; CCB V2, CL3.1 & 1.3)

MRR.75 Quantified NERs by vintage year for the current monitoring period including references to calculations.

The quantified NERs by vintage were calculated in an external workbook. This workbook was provided to the auditor during the verification. Ex-ante estimates are calculated with the best possible information available at the project start. With the introduction of more information over time, many of the data available at the project start are subject to change. Due to the sensitive nature of the baseline emissions model, many of these observed changes, though perceived as small, may have large cumulative effects throughout the project lifetime. These observed changes include monitored project deforestation, the inclusion of an additional leakage analysis requested by VERRA, and variations in measured carbon stocks over the project lifetime.

Table 3-12. Comparison of ex-ante estimate reductions and achieved reductions during the monitoring period.

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Jan-2022 to 31-Dec-2022	8,747,196	4,782,428	45.3%	Please see the text above under MRR.82
Total	8,747,196	4,782,428	45.3%	Please see the text above

3.2.4.7 Evaluating Project Performance

MRR.76 Comparison of NERs presented for verification relative to NERs from ex-ante estimates.

The NERs presented for the verification of the M5 monitoring period are less than the ex-ante estimates at M1.

MRR.77 Description of the cause and effect of deviations from ex-ante estimates.

The NERs presented for the verification of the M5 monitoring period are less than the ex-ante estimates at M1. The first reason for this is that there was some deforestation and forest degradation that was captured by the plots. The biomass inventory plots are designed to capture both the regrowth of degraded forest and any deforestation or forest degradation that

may occur within the Project Area. With the re-measurement of the plots at this monitoring period the carbon stock values were found to be lower than at M1 monitoring period.

3.3 Optional Criterion: Climate Change Adaptation Benefits

Communities in Africa are widely expected to be more vulnerable to climate change than populations in other parts of the world due to the conflation of three factors: a higher than global average degree of change; high levels of dependence on natural resources and forest goods and services; and a low degree of adaptive capacity. Africa's low adaptive capacity is due largely to extreme poverty, frequent natural disasters, agriculture that is heavily dependent on rainfall, and other structural weaknesses.

The DRC is among the world regions with the lowest food security and the lowest ability to adapt to future changes, as indicated in the human development index. This situation applies to the communities within the project area as. For example, there was long drought period in 2011 which adversely impacted crop yields.

Furthermore, human health is predicted to be adversely affected by projected climate change in Africa. In recent years, it has become clear that climate change will have direct and indirect impacts on diseases that are endemic to Africa. For example, recent data from West Africa indicate that the risk of new epizootic diseases is increasing in the region, with, for example, significant exposure to the Rift Valley Fever virus among livestock herders and wildlife rangers during the wet season. In the past, this disease-related impact has been observed in the project area with an observed increase in malaria.

3.3.1 Activities and/or processes implemented for Adaptation (CCB V3, GL1.3)

The Project has implemented many project activities that will assist communities and biodiversity to adapt to the most probable impacts of climate change. The foremost of these is the protection of the forest from deforestation, degradation, and fragmentation. This will protect important healthy habitat for biodiversity, providing greater population resilience to the effects of climate change. As well, this will provide the communities with greater resources, help support more sustainable hydrological systems, and help moderate the impacts of severe weather. The Project is additionally supporting the improvement to and diversification of agricultural methods. This will help support greater nutrition and better yields despite shifting climate driven weather patterns. The Project is also supporting new and diversified income generating opportunities, reducing the communities' reliance on forest resources, fishing, and agriculture. With a more diversified array of income sources, they will be better able to handle any climate change related impacts to fishing and agriculture.

Table 3.12 describes the expected climate changes in the Project zone, their effect on the communities or biodiversity and the Project's adaptive strategy. The Project is also employing adaptive management; therefore, as new climate change risks and/or effects are identified

during the Project's lifetime new adaptive strategies will be developed and implemented. These strategies will also be community based and will include women representatives. The Project's casual model is shown in the MNRP PDD Section 2.1.11. These results chains demonstrate the how the Project activities will achieve the Project's stated adaptation benefits.

Table 3.12: Climate change risks, potential effects, and potential mitigative/adaptive strategies

Climate Change Risks	Potential Effects	Potential Mitigative/Adaptive Strategies
Pockets of rain in the dry season	Could have positive effects on some agricultural species, such as banana, plantain, and cassava	Extend cultivation of appropriate species over a wider area/time
Drying of swamp forests and some watercourses	Could have a positive impact on the growing of some crops and the number of growing cycles	Expansion of production and yields
Drying of swamp forests and some watercourses	Could have a negative impact on availability of building materials (e.g., palm fronds for thatch), availability of food sources, and transportation by pirogue (a type of canoe)	Other types of roofing materials could be made available through the project, some of which would be longer lasting
Torrential rains in the rainy season	Cassava tuber rot	Seek improved seeds, relocate fields
Pockets of drought in the rainy season	Withdrawal of wildlife, reduced crop production	Reduce the pressure of illegal hunting on stressed wildlife species, protect terra firma forest, seek more tolerant crop/seed varieties
More intense and longer heat spells/dry seasons	Increase in the number of bush fires; death of seedlings planted as a project activity; fewer edible caterpillars and mushrooms and other non-timber forest products; decrease in fish stocks; animal morbidity; outbreak of diseases such as malaria and typhoid; loss or degradation of community water sources; crop failures	Raise awareness of the dangers of bush fires; plant a wider variety of species increasing percentage survival; use more drought-resistant nitrogen-fixing crops; plant caterpillar host plants; promote improved livestock-raising techniques; improve access to health care and provide education on disease prevention measures; improve access to potable water through creation of wells and other means; diversify crops and reduce monocropping; agroforestry techniques such as interplanting and use of shade trees

Low capacity of local populations to adapt to frequent natural disasters	Increase in periods of food insecurity, potential increase in disease and deaths with continuing very low health standards, potential for increasing intercommunity conflict	Increase support of local institutional structures, including the norms and rules of governance, to help develop adaptive strategies; increase literacy levels; diversify livelihood activities and income generation projects; involve women to a greater degree in decision-making processes, ²⁰ increase general participation in decision making at the local level
Increase in high winds	Loss of branches of multipurpose trees, damage to poorly constructed structures	Plant trees around important species as wind breaks; contribute project funds to building renovation and construction using better building standards
Decreased biodiversity, loss of forest cover to drought, temperature change	Reduction in species, more species at risk	Help to maintain intact and interconnected ecosystems through protection of the primary forest; plant species more resistant to the climate change that is occurring

Activities and processes implemented to help communities and biodiversity adapt to the probable impacts of climate change

Please refer to Section 2.1.1 for a detailed description of the Project's implementation status and the Concession Contract under the Social Clause (Cahier de Charge) to view the main project activities. This section will include a brief overview of implemented project activities and how they specifically assist communities and biodiversity adapt to climate change.

Communities

The implemented activities to assist communities with the adaptation to probable impacts of climate change includes the direct employment by the Project, training on new income-generating activities, training on new agricultural and fishing methods, and improved infrastructure such as bridges and lake transport. All activities will help mitigate the most probable impacts of climate change for communities, notably reduction in agricultural yield due to climatic changes and loss of income and damage from flooding.

Biodiversity

The most primary and most vital Project activity for to assist biodiversity is the protection of the Project area from deforestation and degradation. Through the maintenance of the native forest condition in an unfragmented state, it will provide the forest ecosystem with the greatest

resilience against the most probable impacts of climate change. This will provide the biodiversity with continued sustainable food and water sources and a stable habitat.

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CCB V3, CM2.1; CCB V2, CM1.1)

Community group	Whole community
Impact	Improved community well-being
Type of benefit/cost/risk	Long-term impact
Change in well-being	Activities under the theme of community capacity building and social capital involve building the local capacities of communities through workshops and information sessions, the establishment of CLDs, and the creation and execution of local development plans. The tangible, measurable outputs for these activities will include completed training activities, establishment of CLDs in each village, and the completion of local development plans. The Mai Ndombe REDD+ project expects that outcomes and short-term impacts resulting from these outputs will include increased local knowledge and skills with respect to participatory, democratic decision-making and management-oriented processes related to community development. Short- and medium-term impacts resulting from this increase in knowledge and skills include the communities' ability to collectively and locally respond to community issues, and an increased local capacity for governance, administration, and problem-solving. Ultimately, as these skills are developed, assisted and enhanced, the long-term result will be improved community well-being.

Community group	Whole community
Impact	Improved community well-being
Type of benefit/cost/risk	Long-term benefit
Change in well-being	Both health and education infrastructure development have been identified by the communities as high-priority focal areas

	for project activities. These infrastructure developments are expected, over the longer term, to increase the quality and accessibility of health and education. Accessibility of both education and health is a key project outcome as project activities will increase the numbers of students who have access to schools and who will graduate; more people will have access to timely medical care, rather than walking many kilometres for care or resorting to non-medically proven remedies. The expected short- to medium-term impacts of these outcomes are an increased level of education and health, and, subsequently, increased local capacities and increased life expectancy. Ultimately, the long-term result of these activities is estimated to be improved community well-being.
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Community group	Whole community
Impact	Improved food security and resilience; Improved family and community well-being
Type of benefit/cost/risk	Long-term impact
Change in well-being	Agricultural improvement and diversification activities that increase food availability and sustain economies were identified as a key focal area by project area communities during initial consultations and CLD-building workshops. Tangible and measurable short-term outputs are the establishment of a tree nursery, agroforestry, and agriculture demonstration plots and the construction of domestic animal enclosures. The expected outcomes resulting from these outputs are the dissemination of effective agricultural techniques and other knowledge. These outcomes are intended to subsequently lead to impacts of increased quantity, diversification, and value of crops for the market. Additionally, agricultural techniques are expected to become more sustainable, and the nutritional value of harvests is expected to improve. Ultimately, these activities are estimated to have the long-term impacts of improved food security and resilience for communities, which will improve family and community well-being.

4.1.2 Negative Community Impact Mitigation (VCS, 3.19; CCB V3, CM2.2; CCB V2, CM3.6)

Theory of Change

In measuring and monitoring impacts of the MNRP on the local communities, Wildlife Works applies the cause-and-effect logic and associated theories of change. A theory of change is a hypothesis about how a project intends to achieve its intended objectives. Because they are based on several assumptions about the cause-and-effect relationships, carefully selected indicators are needed to monitor these assumptions in a causal chain analysis. The main strength of this logic lies in presenting a credible response to the challenge of attribution: indicators measure progress towards achieving the desired project outcomes and impacts from project activities and strategies. To design this, Wildlife Works holds Social and Biodiversity Impact Assessment (SBIA) community workshops to engage the community in thinking about how things would have been without the project, envisage how they may be with the project, and identify any potential risks and negative impacts. For the MNRP, Wildlife Works held two community workshops reported in detail during M2. They identified six Focal Issues that they felt were both critical to their wellbeing and successful implementation of the REDD+ project. A result chain diagram was then produced for each issue during the workshops, which formed the basis of indicator identification and the monitoring plan.

Risks and Negative Impact Analysis

In line with the precautionary principle, measures were taken to ensure to prevent negative impacts on all the community group. At the project initiation, the Mai Ndombe project team reviewed the full range of potential negative community impacts arising from REDD+ projects which center around reduced availability of land for agriculture and associated reduction to food supply, reduced availability of timber and non-timber forest products, potential conflict or disruption to traditional social or governance structures and external impacts like increased migration to the project area. The SBIA community workshop participants were also tasked with identifying possible risks to project success, plus unexpected side effect(s) from the REDD+ Project successfully realizing the desired results (based on the Focal Issues they identified and associated theories of change above). Additionally, they were also required to gauge the likelihood and magnitude of these unintentional side effects then propose possible mitigation which formed the basis of the risks and negative impact assessment from the community's perspective.

M5 negative community impact mitigation

No negative impacts on the well-being of communities have been identified as a result of project development and implementation during the M5 monitoring period. However, conflicts and disagreements may arise due to unmet expectations of stakeholders. With this in mind, the MNRP has mechanisms for correcting and resolving disputes, as well as for dealing with grievances should they arise (Sections 2.3.13 and 2.3.14). While negative impacts are not foreseen, if mitigation measures are required, these will be in line with the precautionary principle in that they will only be taken if the environmental impact is known to be minimal.

With regard to HCVs, they have been properly identified and the REDD+ initiative provides a consistent and valuable opportunity to finance and monitor actions that promote their conservation.

4.1.3 Net Positive Community Well-Being (VCS 3.19; CCB V3, CM2.3, GL1.4; CCB V2, CM2.3, GL1.4)

The community project activities undertaken and summarized under section 2.1.1.2 were all determined by the community themselves based on the outcomes of the SBIA workshops as described under section 4.1.1.1 above. Consequently, based on the theory of change logic, we argue that the MNRP is having positive impacts to the local communities by addressing the main problems they identified e.g., through water projects, school infrastructure improvement, and agricultural intensification. Whereas the impacts at household level are sometimes going to take a long time to be felt, the results chains demonstrate how these will come about from the current project activities, i.e., the theory of change elaboration. In general, the MNRP has been designed from the ground up to provide net positive community well-being impacts. The prospects for these communities in the without project scenario were evident from the condition they were in as of the project start date as further elaborated during the SBIA workshops. According to the community, most of these key social issues would deteriorate in the absence of the REDD+ project, with a few remaining unchanged. This was mostly attributed to minimal external or State investment initiatives in the area, poor or little oversight and law enforcement, lack of alternative sources of income for the communities, and lack of awareness or community sensitization, education and training opportunities.

4.1.4 Protection of High Conservation Values (CCB V3, CM2.4; CCB V2, CM1.2)

Section CM1.2 of the MNRP CCB PDD discusses the HCV's that have been identified for the MNRP and indicates how they are likely to be positively impacted by our project activities. Indeed, the implementation of project activities under the current monitoring period will not have any negative effects on the following three community HCVs identified for the MNRP:

1. Areas that provide basic ecosystem services in critical situations: HCVs under this category included forests critical to water catchments (ecological interconnectedness and protection of the high-priority Lake Mai Ndombe freshwater designated area, and the Tumba-Ngiri-Mai Ndombe wetland) and barriers to destructive fire (drying microclimate and increasing tropical forest fire frequency and severity). Ongoing protection of the natural forest through conversion of the land-use concession from unsustainable logging to protected status positively impacts this HCV.
2. Areas that are fundamental to meeting the basic needs of local communities: HCVs under this category are fish habitats dependent on the health of forest-riparian-supported spawning areas; non-timber forest products; and supplies of wood for cooking, and vines and poles as raw materials for building and crafts. Again, the protection of indigenous forests through

conversion of the land-use concession from unsustainable logging to protected status inherently provides significantly positive effects for this HCV through retention of basic access to forests by the communities, especially for the utilization of non-timber forest products.

3. Areas that are critical for the traditional cultural identity of communities: HCVs in this category are sacred sites within the project zone's forests, including burial and spiritual sites as well as non-timber forest products frequently used for artistic and traditional purposes. Protection of forests through conversion of the land-use concession from unsustainable logging to protected status inherently provides an increased level of protection for this HCVs compared to the baseline.

4.2 Other Stakeholder Impacts

4.2.1 Mitigation of Negative Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB V3, CM3.2; CCB V2, CM2.2)

Please see the CCB PD Section 2.2 for a detailed description of the Project's plan to mitigate negative impacts on stakeholders. The two potential offsite stakeholder impacts, namely reduction in volume of resources that are extracted from the project area and increased competition related to an increase in the quality and/or quantity of agricultural products exported from the project area are only anticipated to occur minimally, if at all. Most of the previously harvested wood was not processed anywhere in the DRC but were exported out of the country, while the supply of bush meat in the baseline scenario was non-sustainable and in severe decline due to overhunting and habitat loss, whereas project agricultural-related activities intend to improve options for protein sources. Nonetheless, our continuous monitoring activities will incorporate measures to address any potential negative offsite impacts should they become apparent.

4.2.2 Net Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB V3, CM3.3; CCB V2, CM2.3)

As described in the preceding section, the Project is unlikely to have any negative impacts on offsite stakeholders. We argue that project activities will, at the very least, do no harm to offsite stakeholders because project activities are designed to positively impact stakeholders both within and outside the project area. Besides higher revenues to government from the concession agreement itself, no activity-shifting leakage is expected as there will be no displacement of population from the project area elsewhere. Therefore, there will be no offsite impacts to humans or biodiversity.

4.3 Community Impact Monitoring

4.3.1 Community Monitoring Plan (CCB V3, CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5; CCB V2, CM3.1, CM3.2, GL1.4, GL3.6)

Community Monitoring Plan Development

The MNRP employs the theory of change causal model to consider, formulate and justify the various project activities and strategies. This includes designing and developing project indicators and a monitoring plan that tracks key project outputs and outcomes. The MNRP project communities have highlighted key social issues as being critical to their wellbeing and the successful implementation of the REDD+ project.

- Forest degradation, including non-compliance with forest conservation.
- Excessive exploitation, including fishing and non-compliance *with environmental legislation*.
- Extreme poverty, including a lack of jobs.
- Unsustainable agriculture, including a lack of agricultural extension and feeder roads to the market.
- Poor health.
- Poor education standards.

Project Activity M5 Implementation Status (1 January 2022 – 31 December 2022)

Indicators and monitoring results for community-related project activities were based on the results chains and theory of change models derived from the SBIA community workshops. We have employed an adaptive management approach during project implementation, allowing for stakeholder feedback and suitable adaptation in response to emerging issues and/or changing circumstances on the ground (see Section 2.2.5). The major community activities undertaken during the fifth monitoring period (M5) are described in detail hereinbelow (see also Section 2.2.1).

1. Schools and education support

School design and construction, which is the MNRP's most significant and expensive project activity, is a multi-year process. Hence, design, construction, upkeep and enhancement take place during various monitoring periods. The project site's harsh conditions require continuous maintenance for the schools, even after their construction. As a result, maintenance (such as painting, roof repair, etc.) and supply and school furniture refilling are all part of the school design and construction process. Construction was completed on five schools during the M5 monitoring period (Table 4-1). There are 700 new or newly trained teachers working in schools

in the Project Zone, with approximately 2100 pupils attending the newly constructed schools. Work has begun on eight other schools throughout the Project Zone (Figure 4.1). The new work boats (described in Section 2.2.1) have been used to transport children from several villages to schools and back.

Table 4-1 Progress on school construction during the monitoring period

No.	VILLAGE	ACTIVITY	BEGINNING	END
1	Nselenge A	School	Mar-21	Sep-22
2	Nselenge B	School	Sep-21	In progress
3	Mpatambalu	School	Dec-21	Dec-22
4	Bosongo	School	Oct-21	In progress
5	Lokanga 2	School	Jun-21	In progress
6	Nkondi	School	Dec-21	Nov-22
7	Loombe	School	Sep-22	Dec-22
8	Mbwenzey	School	Sep-22	Dec-22
9	Ngandomanga	School	Nov-22	In progress
10	Ntuku	School	Dec-22	In progress
11	Bobolampinga	School	Dec-22	In progress
12	Mpili	School	Nov-22	In progress
13	Kundo	School	Nov-22	In progress



Democratic Republic of Congo

Mai Ndombe REDD concession

Project Activities

1. Schools

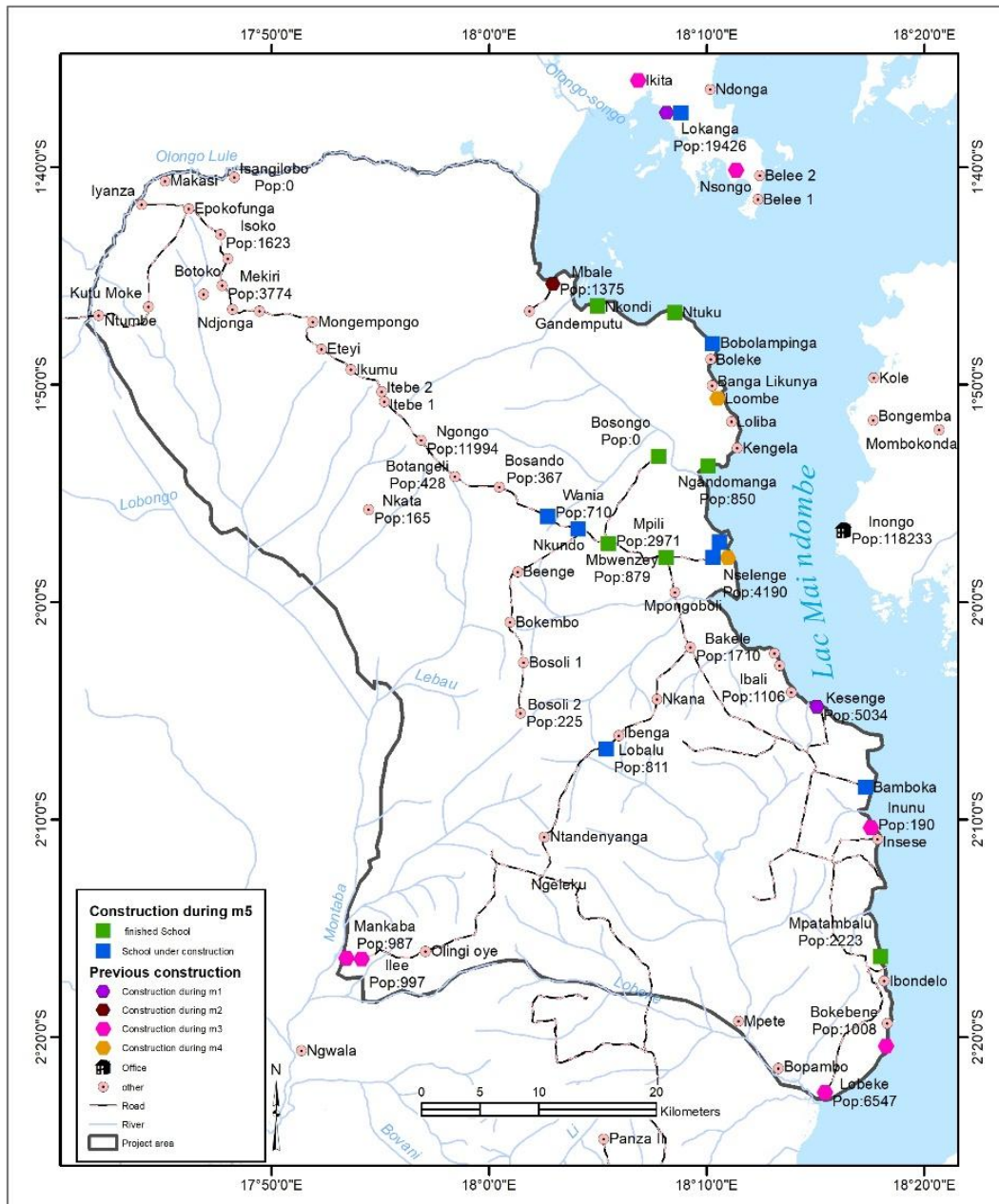


Figure 4.1 Map of schools built or under construction during the M5 monitoring period

2. Healthcare Facilities

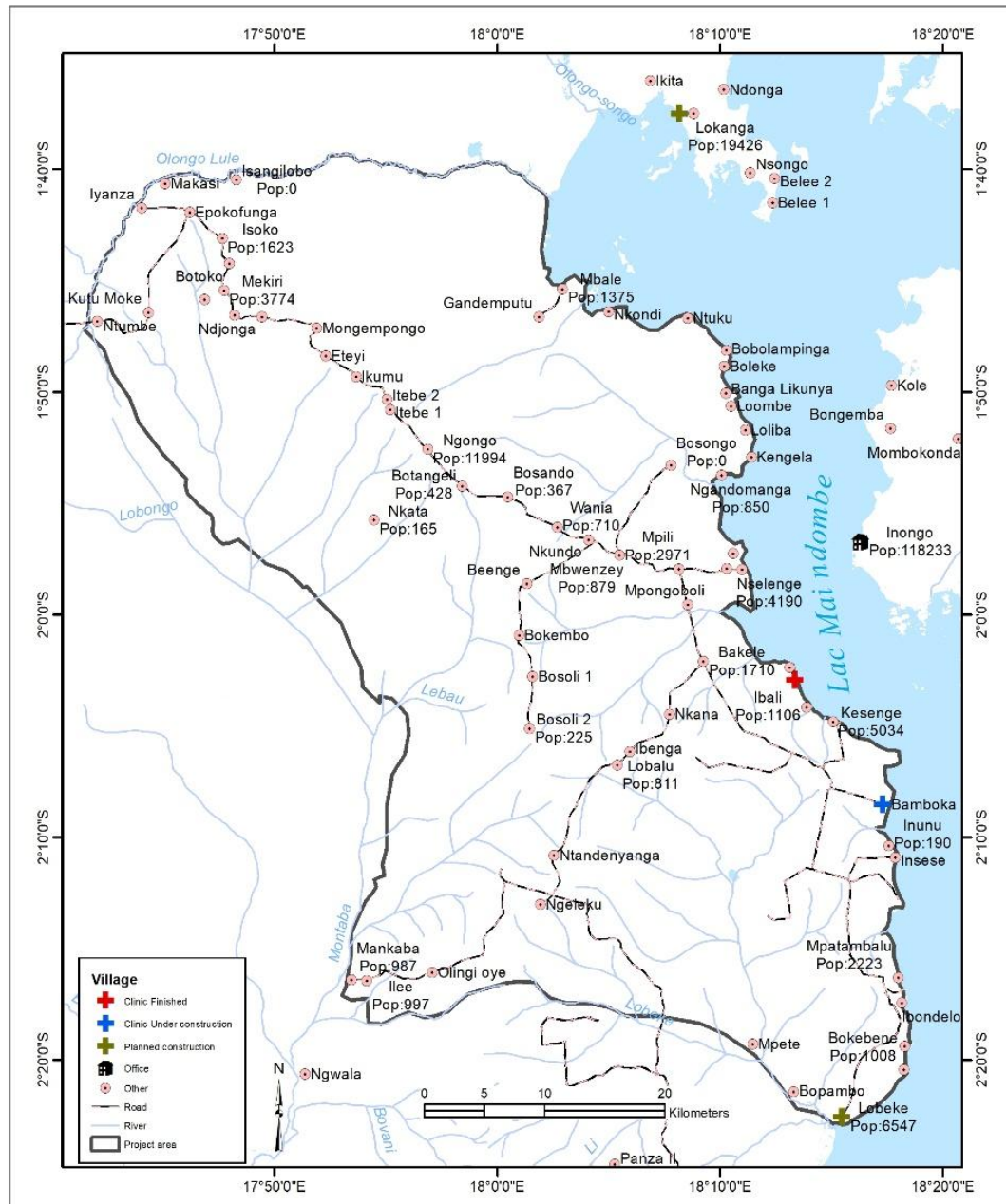
The mobile clinics are an important activity that has been a focus of the MNRP since its inception (Figure 4.2). Mobile clinics were established under the MNRP in collaboration with the Territory Health Commissioner and happen at least twice a year, including during the COVID-19 pandemic. Additionally, Measles and Rubella occur periodically in the project area due to a lack of vaccination for children. In the M5 monitoring period, 775 patients were treated or vaccinated at mobile clinics throughout the project zone.

During the monitoring period, there was a outbreak of monkeypox (Mpox). Twenty villages in the concession were affected by the Mpox outbreak. Eleven doctors and 81 nurses were mobilized and paid by the project to participate in the response to the epidemic. As a result, 1211 people with Mpox were cured out of 1268 cases found.



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**Mai Ndombe REDD concession
Project Activities
2. Clinic**



Source : Service statistiques/Territoire d'Inongo
Statistiques des populations 2015

Figure 4.2 Map of clinics built, under construction, or planned during the M5 monitoring period

3. Agricultural Intensification and diversification

Improved Yield Cassava: Cassava bread is the most important food in the diet of the Mai-Ndombe community. Cassava production has been affected by cassava root fungus (mosaic) which has destroyed many plantations in the region. Following this situation, plant breeders have developed improved cassava varieties resistant to the fungus and providing high yield in marginal soils. MNRP has acquired these biological materials which have been successfully tested in 3 different sites in the project area. Two of the varieties have been further cultivated in the project area to provide cultivated materials to local communities. Multiplication farms have been set up in Loombe and Nsongo. Local community members then requested those improved yield cassava sticks and created their own farms with support from our team of agronomists. The Gender Empowerment Section of the MNRP has been especially instrumental in helping women in the project area with their cassava plantations. Almost 80% of women in the villages participated in this activity.



Figure 4.3 Banana tree propagation in the Mai Ndombe REDD+ project

Agriculture villages: Farm animal wandering within villages is an important driver of deforestation in the project area because community members avoid farming within their villages (Loombe and Nsongo) due to fear of their farms being destroyed by these animals, mostly pigs, goats, and sheep. The Agricultural village brings all the animals together to an enclosure in a marginal fallow land next to the village. The enclosure is large enough to prevent interaction between different species. Several highly nutritious plant species are planted in certain sectors of the enclosure to feed the herbivores. This allows local community members to freely farm near their villages and to stop expanding into the primary forest. After successfully testing this concept in the agriculture village of Loombe, the second agriculture village has been set up in Nkondi village located between Mbale and Loombe. During M5, 51% of households adopted new farming methods, disaggregating new crops, livestock enclosures, or agroforestry (Figure 4.4). Furthermore, 93% of households now eat vegetables and meat from their own farms and a 69% increase in productivity has been reported.

Demonstration gardens: These were initiated at the beginning of the project during M1. Gardens have now been set up in several villages across the project area. This activity continued during this monitoring period with the main objective of producing diverse

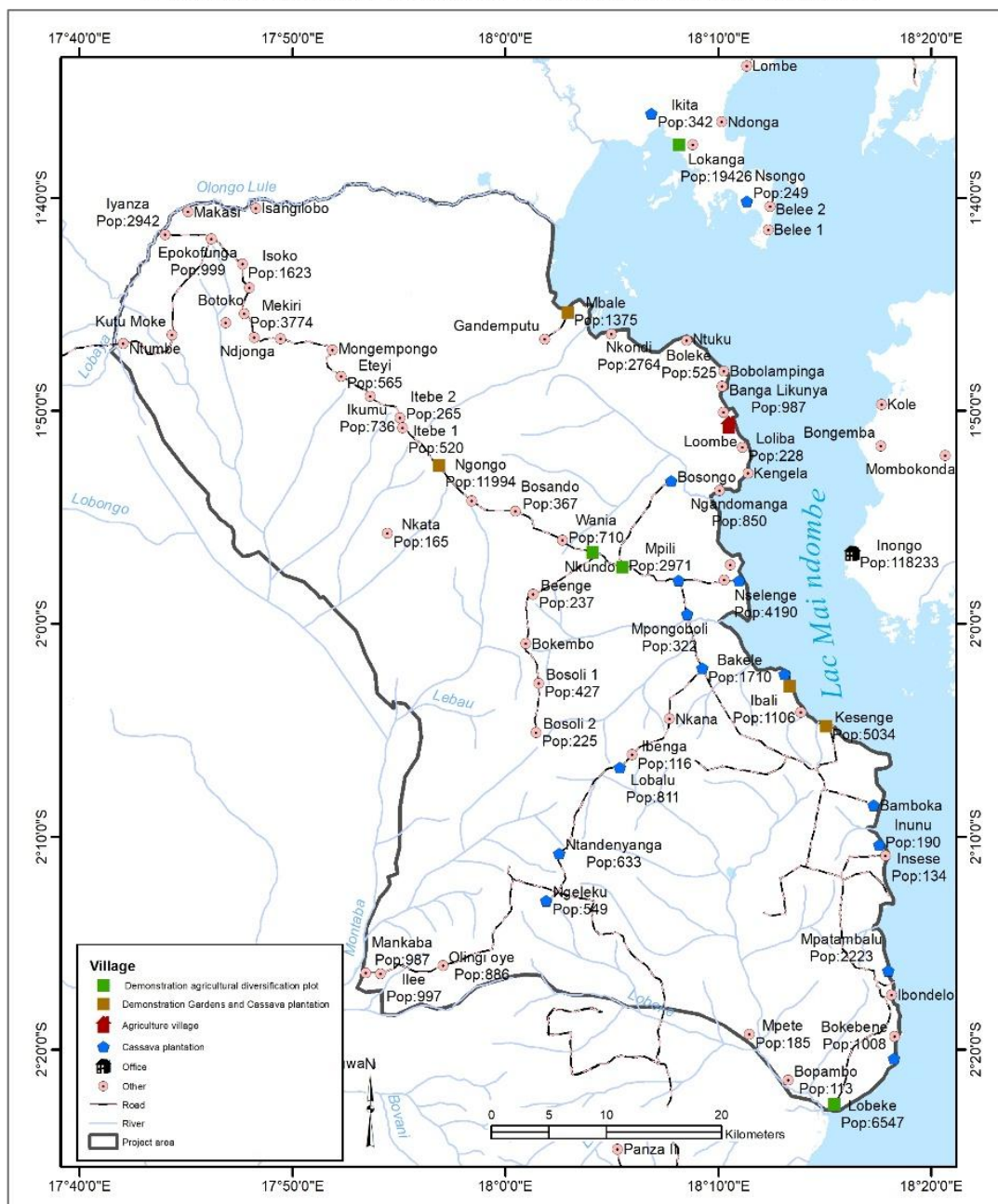
agricultural products such as tomatoes, onions, and vegetables both for local use as well as for sale, thereby avoiding having to purchase them externally, e.g. from Kinshasa. During M5, 26 demonstration gardens were established and operational. There were 2110 community members who visited the demonstration gardens during this monitoring period.



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Mai Ndombe REDD concession Project Activities

3. agricultural intensification and diversification locations



Source : Service statistiques/Territoire d'Inongo
Statistiques des populations 2015

Figure 4.4 Agricultural intensification and diversification locations

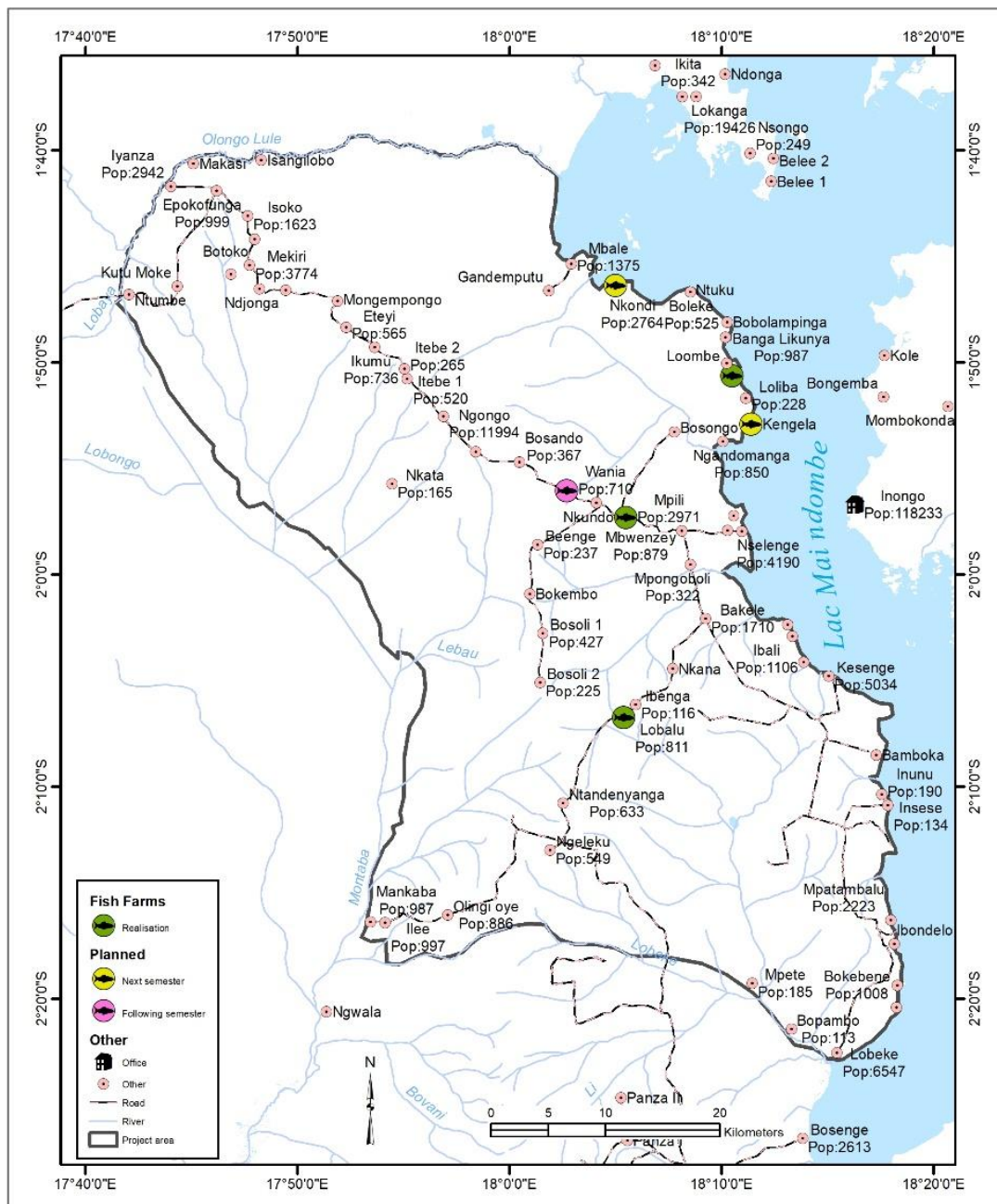
4. Food security and nutrition

Fishing: The local communities living in and around the MNRP are generally below the poverty line and heavily rely on subsistence agriculture. Health and nutrition status remain extremely poor, with over a third of children under five being chronically malnourished. Fishing used to be the most important activity for numerous people in the project area until the introduction of mosquito nets for fishing in Lake Mai-Ndombe, which contributed to the depletion of the lake. The fishing program's main objective is to create fish farms (ponds) which will provide food for the local community and a sub-program to replenish the Lake with local fish. Three fish ponds have been built to date, and two during the M5 monitoring period in Lobalu and Nkundo (Figure 4.5). These fish farms were built to combat malnutrition in villages. Nile tilapia (*Oreochromis nilotica*) and catfish (*Clarias* sp.) have been successfully introduced into the ponds in Loombe and are now being fed using local nutriment. The growing of these fish in the ponds allows us to project a successful activity in the coming months.



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Mai Ndombe REDD concession Project Activities 6. Fish farms



Source : Service statistiques/Territoire d'Inongo
Statistiques des populations 2015

Figure 4.5 Location of fish farms throughout the MNRP project zone

Potable water: To solve the problem related to waterborne diseases, the MNRP is implementing solutions that are affordable, allowing communities to meet their need for potable water (Figure 4.6). We have acquired a low-cost drilling machine which has proven its usefulness and effectiveness in some parts of the African continent and in Kinshasa as a means of increasing the availability of potable water in remote villages. Hydrogeology is highly favourable for lightweight equipment drilling, and the secure water table can be reached at less than 50 metres from the surface in most of the project area. With these low-cost water drilling rigs, we can now bring water to more than 100,000 people in the project area. Twenty-one wells were built and maintained during M5, and 60% of households now report improved access to potable water (Figure 4.7).



Figure 4.6 Example of a new water well in the Mai Ndombe REDD+ Project

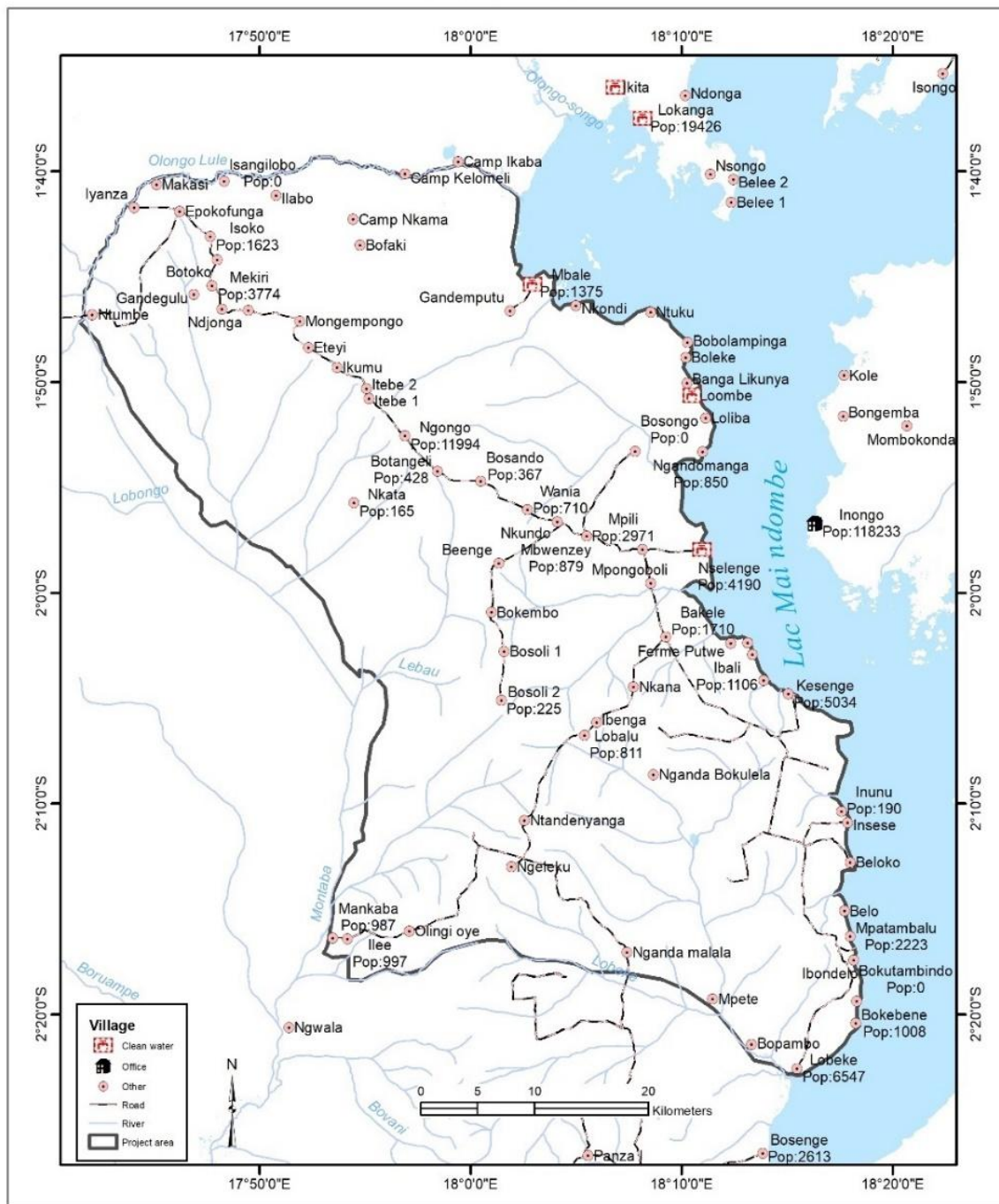


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Mai Ndombe REDD concession

Project Activities

5. Clean water



Source : Service statistiques/Territoire d'Inongo
Statistiques des populations 2015

Figure 4.7 Location of water wells in the MNRP Project Zone

5. Local Development Committees

Capacity for Local Development Committees (CLDs) was renewed and reinforced across several villages in the Groupements across the MNRP (Figure 4.8). During M5, eight CLDs were elected and trained. These CLDs have been a vital component in supporting all project activities on the ground as their membership represents the Groupements for all major decisions related to the MNRP. CLDs are instrumental in conveying all forms of project-related information to the communities through community meetings.

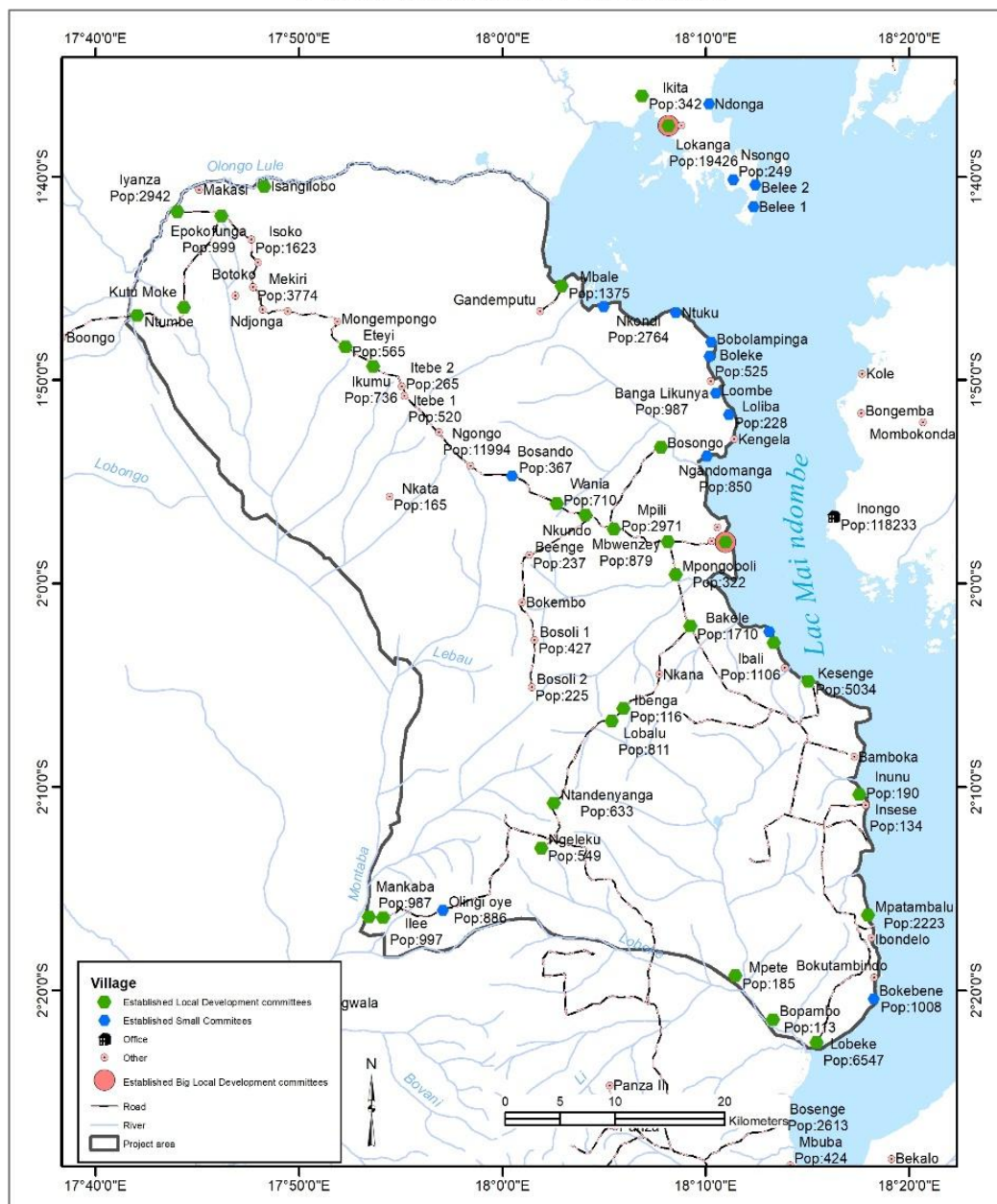


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Mai Ndombe REDD concession

Project Activities

4. Local Development Committees



Source : Service statistiques/Territoire d'Inongo
Statistiques des populations 2015

Figure 4.8 LCDs maintained and reinforced

6. Lake transport for communities

In the Mai Ndombe region, lake transport is the main barrier to improved livelihoods, particularly for accessing healthcare in Inongo. Identified as a critical need in the causal model and facing a general lack of affordable public lake transport, the MNRP has endeavoured to improve the situation by offering free, safe voyages to community members in need. During this reporting period, the MNRP continued to fund and support the running of eight passenger boats to allow 218 community members to cross the lake, including a "coque" and a "baleinière". Our "baleinières" have been used for transportation of community members and their goods to and from Inongo. Our speedboats have been used primarily to facilitate urgent evacuation of people with illnesses from the villages.

Community Monitoring Plan Results

The results of the community monitoring plan, including the general activity area, key objectives and corresponding indicators, and the M5 results are provided in the table below.

Table 4-2 Community monitoring plan results

Activity Area	Objective	Indicator Type	No.	Indicator	M5 Result	# Beneficiaries/ participants
1: Climate and Ecosystem Conservation Activities	Conservation of forest concession	Outcome	SIA#1	A signed forest conservation concession contract and supporting TOR*, MOU*	Done	NA
		Output	SIA#2	# awareness and sensitization meetings held	10	675
		Impact	SIA#3	# Net tons tCO ₂ e emissions avoided	5,332,546	NA
2: Community Capacity Building and Social Capital	Improved local capacity for natural resource management, governance and land-use planning at individual and organizational levels	Output	SIA#4	# of CLDs and/or Annex Committee formed and members elected/trained	8	120
		Output	SIA#5	# of CGs formed and members elected/trained	0	0
	Community-based selection and implementation of project activities	Output	SIA#6	# of EISB (SBIA) Workshops held and participants	2	130
		Outcome	SIA#7	# of PLD development workshops held	4	60

	Building local capacity for forest and biodiversity monitoring	Outcome	SIA#8	# of PLDs written and approved	4	
		Impact	SIA#9	# of projects executed under the PLD	2	33
		Output	SIA#10	# local people trained in sampling, biodiversity surveys and monitoring	2	22
	Improved capacity and awareness towards workplace safety	Output	SIA#11	# OHS workshops/seminars held and people trained	1	20
		Output	SIA#12	# OHS procedures/manuals in-place and operational	-	-
		Outcome	SIA#13	# OHS equipment sourced and installed	67	135
		Impact	SIA#14	# OHS-related incidents reported across all project operations	0	0
3: Infrastructure Development, incl. Education,	Improved quality of education including access, buildings and other	Output	SIA#15	# of schools built or renovated within the Project Zone	5	7,920
		Output	SIA#16	# of school equipment or other infrastructure provided e.g., uniforms, desks, chairs	Information not available	NA

Health and Transport	education infrastructure	Output	SIA#17	# new or newly-employed teachers under the MNRP working in the local schools		700
		Output	SIA#18	# of students receiving bursaries for school fees from MNRP	Information not available	NA
	Improved attitudes towards education	Output	SIA#19	# community or school meetings held on education matters	4	83
		Outcome	SIA#20	% enrollment of girls in schools within the Project Area		32%
		Outcome	SIA#21	# students from local community graduating with a State Diploma		850
	Improved healthcare Infrastructure	Output	SIA#22	# of new, repaired or equipped healthcare facilities	1	
	Improved access to medical care and health	Output	SIA#23	# mobile clinics established, equipped or deployed	5	
		Output	SIA#24	# new potable water wells built or repaired	21	27,615
		Output	SIA#25	# km of road constructed or repaired		NA

	Improved transport infrastructure	Output	SIA#26	# project-supported water vessels providing transportation services to community members	8	218
4: Agricultural Improvement and Economic Opportunities	Improved, sustainable and profitable agricultural practices for communities	Output	SIA#27	# training workshops by agricultural extension officers in project zone	2	144
		Output	SIA#28	# of demonstration gardens established and functional	2	753
		Outcome	SIA#29	% households adopting new farming methods, crops, livestock, agroforestry	93%	NA
		Outcome	SIA#30	# of hectares of agroforestry fields planted	1	NA
	Job creation and improved incomes	Impact	SIA#31	# total jobs created under the MNRP for all operations	8	NA

4.3.2 Monitoring Plan Dissemination (CCB V3, CM4.3)

The Community Monitoring Plan has been established and accepted by the Project Proponent. The Plan has been made available for public review at the Project Office and was made available to each CLD in the Project Zone during the previous monitoring periods. The full results of the community monitoring are included in this project monitoring report, which is being made publicly available in the Project Area by having a hard copy available for review at the Project Office. Additionally, a monitoring report summary has been written and provided to communities throughout the Project Area in English, French, and Lingala. The monitoring report has also been posted on the VCS and CCB website for public review and comment.

4.4 Optional Criterion: Exceptional Community Benefits

Not Applicable.

The MNRP was not validated at the Gold Level for exceptional community benefits. This section is not applicable.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (VCS, 3.19; CCB V3, B2.1; CCB V2, B1.1)

The Climate, Community and Biodiversity Alliance (CCBA) stipulates that carbon projects should generate net-positive impacts for local communities and for biodiversity. However, measuring changes in biodiversity is tricky, both because of the challenge of attribution and because biodiversity impacts are long-term in nature. Wildlife Works applies the theory of change causal model to think about, formulate and justify the various project activities, strategies and outcomes. Similar to the assessment of changes to the socio-economic well-being of the local communities as outlined in the CCB PDD section CM1.1, the anticipated impacts of the MNRP on biodiversity were also measured and evaluated using a theory of change approach, also referred to as the causal model. The theory of change approach provides a structured, cause-and-effect-oriented approach to project and evaluate how project activities are expected to result in specific expected outputs, which lead to outcomes and eventually to long-term impacts. As recommended by the CCBA, a participatory approach was used in the formulation and implementation of this biodiversity monitoring plan, involving the identification of stakeholders important for delivering the biodiversity outcomes for the Mai Ndombe REDD+ Project. Please see Table 5-1 for a detailed description of changes in biodiversity that have been identified during this monitoring period.

Table 5-1 Changes in biodiversity

Change in Biodiversity	Forest elephant (CR)
Monitored Change	Elephants and elephant signs were consistently encountered along seven transects spreading further into the project area within the FORESCOM stratum.
Justification of Change	While the most likely without-project scenario was high poaching levels leading to an almost complete extinction of this species across the MNRP, recent consistent sightings of elephants across different transects and several months of the year suggest there could be a new resident sub-population within the MNRP and specifically in the Western part of the formerly exploited FORESCOM strata.
Change in Biodiversity	Bonobo (EN)
Monitored Change	Bonobos and bonobo signs were increasingly encountered across the entire MNRP within the different strata (FORESCOM, SOFORMA and Undisturbed Forest) and throughout the year. Bonobos were encountered in 16 transects during this monitoring period.
Justification of Change	While the most likely overall without-project scenario would be fewer sightings throughout the MRNP, spatially, previous surveys reported bonobos far from villages and away from the lake shores. Recent data has revealed that they are approaching villages, perhaps due to reduced pressure and disturbance.
Change in Biodiversity	Giant ground pangolin (EN)
Monitored Change	Giant ground pangolin signs were increasingly encountered across the entire MNRP within the different strata (FORESCOM, SOFORMA and Undisturbed Forest) and several months of the year. This species was encountered in 10 transects during this monitoring period.
Justification of Change	The most likely without-project scenario would be fewer sightings across the MRNP due to high levels of poaching. An

	increasing number of encounters suggest reduced poaching pressure and persecution.
Change in Biodiversity	Long-tailed pangolin (VU)
Monitored Change	Long-tailed pangolin sightings are becoming more common across the MNRP. They were encountered in four transects within two strata (SOFORMA and Undisturbed Forest).
Justification of Change	The most likely without-project scenario would be fewer sightings across the MRNP due to high levels of poaching. An increasing number of encounters suggests improving habitats, reduced poaching pressure, and persecution.
Change in Biodiversity	Leopard (VU)
Monitored Change	Leopard signs are becoming more common across the MNRP. They were encountered in three transects within two strata (SOFORMA and undisturbed forest) in this monitoring period.
Justification of Change	The most likely without-project scenario would be fewer or no sightings across the MRNP due to high levels of poaching. An increasing number of encounters suggests improving habitats (and prey), and reduced disturbance and persecution.
Change in Biodiversity	Angolan colobus (VU)
Monitored Change	Angolan colobus sightings and signs are becoming more common across the MNRP. They were encountered in five transects within all three strata (FORESCOM, SOFORMA and Undisturbed Forest).
Justification of Change	The most likely without-project scenario would be fewer sightings across the MRNP due to habitat loss and high levels of poaching. An increasing number of encounters suggests improving habitats, and reduced poaching pressure and persecution.
Change in Biodiversity	Grey-cheeked mangabey (VU)

Monitored Change	Grey-cheeked mangabeys remain rare; however, they were encountered in two transects within the FORESCOM forest stratum.
Justification of Change	The most likely without-project scenario would be fewer or no sightings across the MRNP due to high levels of poaching. Their continued presence suggests habitats could be improving, which, coupled with reduced poaching pressure and persecution, can lead to their recovery in the MNRP.



Figure 5.1 Camera trap footage of African forest elephants within the project area during the monitoring period

5.1.2 Mitigation Actions (VCS, 3.19; CCB V3, B2.3)

The MNRP Biodiversity Team has considered the full range of potential risks and negative impacts of the successful implementation of this project. Due to the strong conservation focus of the Mai Ndombe project (i.e. the shift from a logging concession to a conservation concession), there will be limited, if any, net negative changes to biodiversity within the project area as a result of the proposed project activities. While the precautionary principle arguably underlies conservation efforts and promotes acting to avoid environmental harm despite lack of certainty about the magnitude or impact of harmful practices, some uncertainty is inherent in conservation and resource management. In the MNRP, care is taken to carry out well designed investigation to avoid errors from inadequate or incomplete biodiversity data. Further, our biodiversity and social monitoring teams work closely to ensure that community

interventions do not negatively impact on biodiversity, and that any issues that may arise from an improvement in biodiversity numbers (e.g. human-wildlife conflict) are handled through appropriate management actions to resolve the issues.

5.1.3 Net Positive Biodiversity Impacts (CCB V3, B2.2, GL1.4; CCB V2, G3.6, GL1.4)

Without-project analysis

The without-project scenario describes what would happen to biodiversity in the project area if the planned REDD+ activities are not undertaken, i.e., the conditions that would occur if the project never took place. Deforestation from the previously planned conversion of the MNRP into a logging concession, plus the ensuing forest degradation from slash-and-burn agriculture and population growth from immigration due to the infrastructural development are the major likely activities to happen, all which would affect biodiversity negatively.

To help think about the impacts of this projected scenario on biodiversity, the MNRP Biodiversity Team used desk (secondary) research and used biodiversity-related inputs derived from the community Social Impact Assessment workshops to identify the following priority issues for biodiversity in the project area:

1. Local extinction of the forest elephant
2. Declining populations of key HCV species, especially bonobos
3. Unsustainable hunting and fishing
4. Loss of habitat and ecosystem connectivity between project and surrounding forests.

Theory of Change

From this analysis, the following theories of change were developed:

- i. Return of elephants into the project area: IF the regulations in relation to hunting are respected, IF wildlife habitat is protected and effective monitoring of biodiversity implemented, THEN animal movement will be free, and elephants will return to the project area
- ii. Increase in HCV species: IF monitoring and security is enhanced, IF wildlife habitat is improved, IF the perception of the community on the conservation of wildlife is positive, THEN there will be an increase in animal populations in the project area including HCVs
- iii. Sustainable harvesting: IF wildlife monitoring and enforcement is strengthened, IF wildlife habitat is protected, IF communities have positive perceptions of wildlife conservation, and IF communities have better education and employment opportunities THEN harvesting will be more sustainable
- iv. Ecosystem integrity and habitat improvement: IF deforestation is reduced, IF slash-and-burn agriculture is eliminated, and IF tree planting is enhanced, and IF charcoal production is

controlled and improved, THEN there will be regeneration of native trees and healthy ecosystems.

The selected project activities for the MNRP have clear benefits for biodiversity compared to a without-project scenario where all the key factors are exacerbated, leading to degradation and loss of natural forest cover and a reduction in the populations of HCV and exploited species. Based on the threats to biodiversity identified by the communities and the analysis of the without-project scenario, it is clear that the development of REDD+ activities will have clear benefits for biodiversity, as their implementation reduces the factors that cause forest degradation or deforestation. The table below shows that rare, threatened or endangered species and their habitats within or adjacent to the project area have not been adversely affected during the monitoring period.

Species and habitat	Demonstration that the project did not adversely impact habitats for rare, threatened, or endangered species.
Forest elephant (<i>Loxodonta cyclotis</i>)	Proper management of forests in the project area has seen the return of a small population of forest elephants to the MNRP. These elephants have been driven into the project area from the neighbouring industrial logging areas where they experience disturbance. Although they are still only found in the FORESCOM strata, a former logging concession, the activity area for this species was shown to be expanding during M5 based on frequent camera trap sightings and signs encountered during transects. Thus the project has net positive impacts for forest elephants in the area,
Bonobo (<i>Pan paniscus</i>)	The area of activity for bonobos is expanding within the project area. During M5, bonobos were among the top ten most encountered species among the three forest strata surveyed. Most female bonobos seen in camera traps during the 5th monitoring period had babies, which suggests a decrease in pressures such as poaching and persecution within the concession. The project has had net positive impacts for bonobos relative to the without-project scenario by reducing poaching threats and protecting bonobo habitats in the area.
Forest cover and structure	Through ensuring ecosystem integrity of the intact forest (by reducing deforestation, slash and burn agriculture and charcoal production), the project has ensured that 299,640 hectares of swamp forest, primary and secondary forest, flooded forest and grassy savannah are safeguarded.

	These are critical habitats for a range of species and provide a range of ecosystem services to the local community (including water, medicine, non-timber forest products and cultural values). During M5, deforestation levels were significantly lower within the project area and in comparison to the project baseline and without-project scenario (see Section 3.2 for demonstration of the Project's monitored avoided emissions, and therefore avoided deforestation, for this monitoring period).
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5.1.4 High Conservation Values Protected (CCB V3, B2.4; CCB V2, B1.2)

The land cover and land use types under the MNRP concession include swamp forest, primary and secondary forest, periodically flooded forest and grassy savannah. These mixed habitat types provide a wide range of high value species, medicinal plants and non-timber forest products (NTFPs) to local communities. The area also supports a wide range of biodiversity, including large mammals and birds. The following High Conservation Value (HCV) species have been identified based on endemism and threat levels according to the IUCN Red List:

- *Loxodonta cyclotis* (Forest elephant): Critically Endangered
- *Pan paniscus* (Bonobo): Endangered
- *Smutsia gigantea* (Giant ground pangolin): Endangered
- *Phataginus tetradactyla* (Black-bellied or long-tailed pangolin): Vulnerable

In addition to its wildlife resources, the MNRP landscape is considered to be of high conservation value for a number of other reasons, including the provision of livelihood resources and services to local communities and strong cultural values to the local population.

The MNRP is fully dedicated to the protection of wildlife, critical wildlife habitat and ecosystem functions, and all project activities undertaken during the reporting period contributed directly or indirectly to the enhancement of HCVs in the MNRP, including security, habitat improvement and improved monitoring. As such, maintaining forest cover is a proxy for maintaining habitat. By protecting habitats and reducing fragmentation, disturbance and conversion of primary forest at the landscape scale, the project ensures that HVCs are not negatively affected by the project (see section B1.2 of the CCB PD).

During this monitoring period, there was a significantly lower level of deforestation, and thus habitat loss, within the PAA in comparison to other areas within the Project Zone. This is also seen when comparing the current situation in the PAA with the project baseline, the without-project scenario, which is complete deforestation of the project area and conversion to agriculture. Please refer to Section 3.2 for demonstration of the Project's monitored avoided emissions, and therefore avoided deforestation, for this monitoring period. The Project's

primary activity is that of conservation, protecting forest area and habitats, and reducing poaching activities, which have no known negative impacts on the HCVs present. This demonstrates that by protecting the forest in the PAA, it will provide a net-positive benefit to the HCVs, both flora and fauna, present in the PAA. Consequently, based on our theory of change analysis, this shows that the Project's net impact on biodiversity, including HCVs, for this monitoring period was positive, as compared to the without-project scenario.

5.1.5 Species Used (VCS, 3.19; CCB V3, B2.5, 2.6; CCB V2, B1.3, 1.4)

Agroforestry demonstration activities in our agricultural intensification and improvement programs use the following species: *Leucaena leucocephala*, *Acacia* sp. and *Morinda lucida*. These species were introduced into the area over 30 years ago and to date there are no known problems of competition (displacement by invasiveness), disease introduction or facilitation. They were selected over native species because of their rapid growth, nitrogen-fixing capacity and ability to restore fertility to marginal areas such as secondary forests. The MNRP will actively consider and prioritize the use of native species and conduct trials using the same where available.

Other species introduced through project activities (specifically, fish farming) were Nile Tilapia (*Oreochromis niloticus*) and catfish (*Clarius* sp.). Both are popular species for aquaculture farming worldwide, providing nutritional and economic benefits to low and middle-income fishing communities worldwide. Care has been taken to avoid accidental escapes of these species into the local river/ lake system, although Nile tilapia are already widespread in the Congo River basin due to extensive historical introductions, mainly through aquaculture practices.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
<i>Leucaena leucocephala</i>	Non-native	They have shown the ability to restore and fertilize marginal land and improve yields when associated with crops. They have also shown a high degree of environmental adaptability and are non-invasive.	The species was introduced to the area over 30 years ago and to date there have been no known problems with disease introduction, facilitation or other adverse impacts on native species.
<i>Acacia</i> sp.	Non-native	They have shown the ability to restore and	The species was introduced to the

		fertilize marginal land and improve yields when associated with crops. They have also shown a high degree of environmental adaptability and are non-invasive.	area over 30 years ago and to date there have been no known problems with disease introduction, facilitation or other adverse impacts on native species.
<i>Morinda lucida</i>	Non-native	They have shown the ability to restore and fertilize marginal land and improve yields when associated with crops. They have also shown a high degree of environmental adaptability and are non-invasive.	The species was introduced to the area over 30 years ago and to date there have been no known problems with disease introduction, facilitation or other adverse impacts on native species.
<i>Oreochromis niloticus</i>	Non-native	Nile tilapia is native to large parts of Africa including the Lake Chad and Nile River basins. The species is widespread in the Congo River basin due to extensive historical introductions, mainly through aquaculture practices. They are a popular aquaculture species that makes an important economic and nutritional contribution to communities in low- and middle-income countries worldwide	Care is taken to confine introduced tilapia to fish farms and prevent escapes of aquaculture species in the area.
<i>Clarias</i> sp.	Native	The permanent swamps surrounding Lake Mai Ndombe contain several species of catfish such as <i>C. buthupogon</i> and <i>C.</i>	Care is taken to prevent escapes of aquaculture species in the area.

		<i>gabonensis</i> . The project has introduced the north African catfish which is native to parts of Africa and the Middle East including DRC and are widely used as an aquaculture species due to its fast growth and reproduction and popularity for as a fish source.	
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5.1.6 Invasive Species (VCS, 3.19; CCB V3, B2.5; CCB V2, B1.3)

As indicated above, agroforestry demonstration activities in our agricultural intensification and improvement programs use the following species *Leucaena leucocephala*, *Acacia sp.* and *Morinda lucida*. Although two of these species are not native to the DRC, they were successfully introduced into the country four decades ago for reforestation and agroforestry projects. Therefore, none of them were imported for the purposes of the project. They have demonstrated their ability to restore and fertilize marginal land and improve yields when combined with crops. They have also shown a high degree of environmental adaptation and are non-invasive. It is possible that other species may be used over the 30-year life of the project. In no case will these be invasive, and their use will be monitored and reported as part of project reporting and verification activities immediately following their introduction into the MNRP.

Existing invasive species	Mitigation measures to prevent spread or continued existence of invasive species
<i>Oreochromis niloticus</i>	The project is taking the necessary precautions to prevent accidental escapes from fish farms into the Mai Ndombe ecosystem. The main reasons for using Nile tilapia, despite the potential risks, are the urgent need for animal protein among the local population and the widespread availability and popularity of the species as an aquaculture species.

5.1.7 GMO Exclusion (CCB V3, B2.7)

No GMOs have been used to generate GHG emissions reductions or removals.

5.1.8 Inputs Justification (VCS, 3.19; CCB V3, B2.8)

The project has avoided use of inorganic inputs such as inorganic fertilizers, chemical pesticides or biological control agents in its sustainable agricultural projects to minimize negative impacts of such inputs.

Name	N/A
Justification of Use	N/A
Adverse Effect	N/A

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (CCB V3, B3.1; CCB V2, B2.1) and Mitigation Actions (CCB V3, B3.2; CCB V2, B2.2)

Mitigation for off-site impacts is not applicable as there is no activity-shifting leakage, as discussed in Section B.2 of the MNRP CCB PDD.

Negative Offsite Impact	Mitigation Measure(s)
Not applicable	Not applicable

5.2.2 Net Offsite Biodiversity Benefits (VCS, 3.19; CCB V3, B3.3; CCB V2, B2.3)

As there are no anticipated negative offsite impacts to biodiversity, evaluation of unmitigated offsite impacts is not applicable.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (CCB V3, B4.1, B4.2, GL1.4, GL3.4; CCB V2, B3.1, B3.2, GL1.4)

For the MNRP, we structure our theory of change logic around the Pressure-State-Response framework. The Pressure-State-Response framework is based on a causal chain in which pressures or threats (e.g. deforestation, grazing or hunting) negatively impact the state or condition of biodiversity (e.g. species abundance or habitat area), but responses or project interventions (e.g. tree planting or law enforcement) are taken to reduce the pressure, which in turn is expected to improve the state of biodiversity. Most biodiversity impact assessments focus on state indicators because they most directly inform project managers about actual changes in biodiversity and therefore allow project impacts to be measured. However, they are

often the most difficult to measure and the slowest to change. Response indicators, on the other hand, are very easy to measure and can change rapidly because they measure the actual interventions a project makes. However, they are the least informative about changes in biodiversity because it is not clear whether they actually reduce threats and whether reduced threats improve the state of biodiversity. Pressure (or threat) indicators are intermediate, as they are easier to measure and are often more closely related to the status of biodiversity on the ground than response indicators.

Wildlife Works sought to formulate a biodiversity monitoring plan for the MNRP with input from all key stakeholders. It was important for this plan to select a range of pressure, state and response variables, so that some indicators could quickly measure and show change, while others could more directly inform project managers of the ultimate impact on biodiversity. This plan would focus heavily on HCV species. In addition, this monitoring plan will be useful in developing appropriate local capacity by highlighting the key roles and requirements for the biodiversity monitoring team and any additional training that may be required, e.g. for eco-guards responsible for monitoring threats and wildlife.

Key Indicators

While biodiversity monitoring focuses on the 'status' of biodiversity, such as presence/absence, abundance and population trends, it often takes a long time to observe and detect changes. Therefore, other strategies are usually used (at least initially) to demonstrate whether the project could improve the status of wildlife, either by (i) reducing threats or pressures such as poaching, and (ii) improving conditions for wildlife such as habitat protection or enhancement. For the MNRP, the following state, pressure and response variables have been identified:

1. State: the wildlife
 - a. Species presence, distribution and movement extrapolated from sightings and signs
 - b. Population abundance and trends extrapolated from sightings and signs
2. Pressure: the threats
 - a. Signs of poaching for subsistence and commercial purposes e.g., snares
 - b. Poached animals seen
 - c. Poaching arrests made
 - d. Charcoal kilns or charcoal bags found
 - e. Felled trees for construction, poles, timber etc
 - f. Illegal grazing incidents and number of head of cattle and shoats
 - g. Instances of human-wildlife conflict e.g., elephant crop raiding, livestock predation
 - h. Encroachment into project area for agriculture or settlement.
3. Response: positive actions
 - a. Number of eco-guards employed and trained
 - b. Number of hours or kilometres of patrols done
 - c. Community-related actions (included in the Community Monitoring Plan under Section 4.3.1)
 - i. Number of tree planting or agroforestry initiatives
 - ii. Number of education-related initiatives

- iii. Number of local jobs created
- iv. Number of awareness, advocacy and sensitisation meetings
- v. Number of farms embracing new agricultural techniques like livestock enclosures
- vi. Number of alternative livelihood options or income generating activities initiated.
- d. Climate-related actions associated with forest conservation that enhance habitat protection and ecosystem integrity.

Please see Section 4.3.1 for the community monitoring results and Section 5.3.1 for the biodiversity monitoring results for the results of these indicators.

Sampling methods and strategies

The following strategies were designed and implemented to provide the necessary data for these indicators:

- **Monitoring of large mammals, birds, and human activities:** A biodiversity monitoring program was set up to conduct surveys of large mammals, birds, and human-related incidents along permanent line transects. The objective is to have a good understanding of the presence and distribution of these species, estimate their populations, but also evaluate threats from human activities. Surveys are conducted during the wet and dry seasons to capture any seasonal variation. A total of 30 permanent transects were laid out across the five major forest strata (habitat types), namely: former SOFORMA logging area, former FORESCOM logging area, grassland, primary forest, and swamp forest; thus, there were 6 transects per stratum, each transect being 3 km long. A grid system was used to perform a stratified random sampling to pick the 30 points which would form the centre of a transect line (Figure 5.2), and a datasheet template was designed for data collection and is being implemented. During transects, observers walked in straight lines while recording all the signs of large mammals, birds, and humans (e.g., droppings of wildlife, their footprints, vocalisations, nests, etc).
- **Monitoring hunting activities:** The aim was to provide data on the status and trends of direct anthropogenic pressure indicators. The monitoring team collects this data through opportunistic interviews with hunters whenever they are encountered. These interviews are conducted throughout the year.
- **Survey the market and Inongo port:** This survey was designed to monitor bushmeat trade activities in the local market and Inongo port. This could also supplement data on the presence and distribution of some elusive species that may have been missed on the transects. A template data sheet was designed to collect this data.
- **Camera traps:** This method was added specifically to monitor and photograph nocturnal and elusive species, which are typically missed during diurnal transect surveys. Camera traps are set opportunistically at selected points along permanent biodiversity monitoring transects throughout the MNRP area. The camera trap is a tool that allows wildlife to be photographed or video in the absence of humans and is currently a standard for wildlife monitoring

- **“Recce” or anecdotal wildlife sightings and human-wildlife conflict:** In addition, project staff, local assistants and all local communities opportunistically provide anecdotal information on direct observations of wildlife near villages. This provides an idea of presence, distribution and trends, and an assessment of potential human pressure on wildlife and associated human-wildlife conflicts.

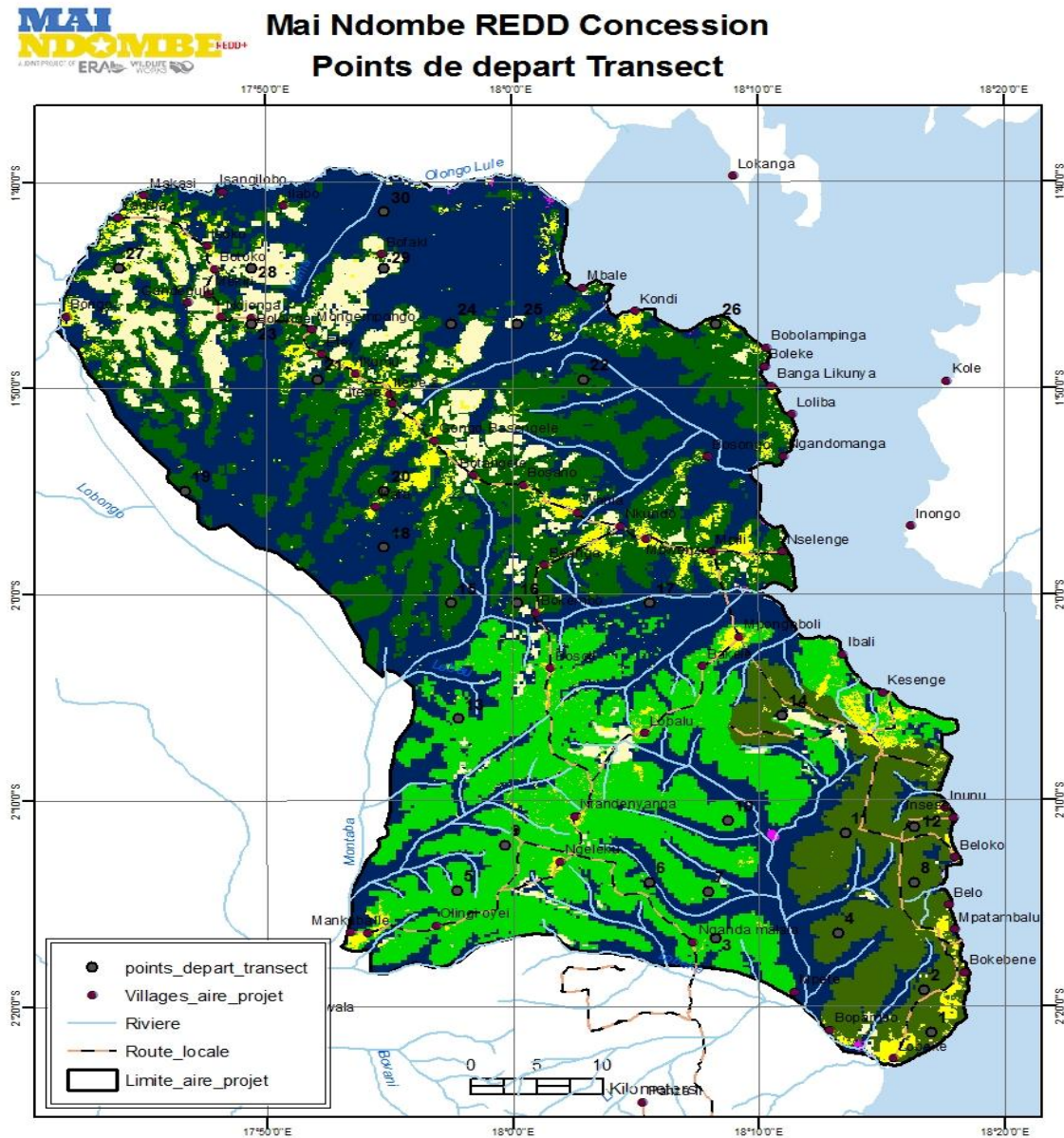


Figure 5.2 The 30 points chosen through stratified random selection to form the centre of the transect line

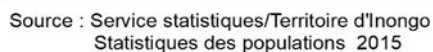
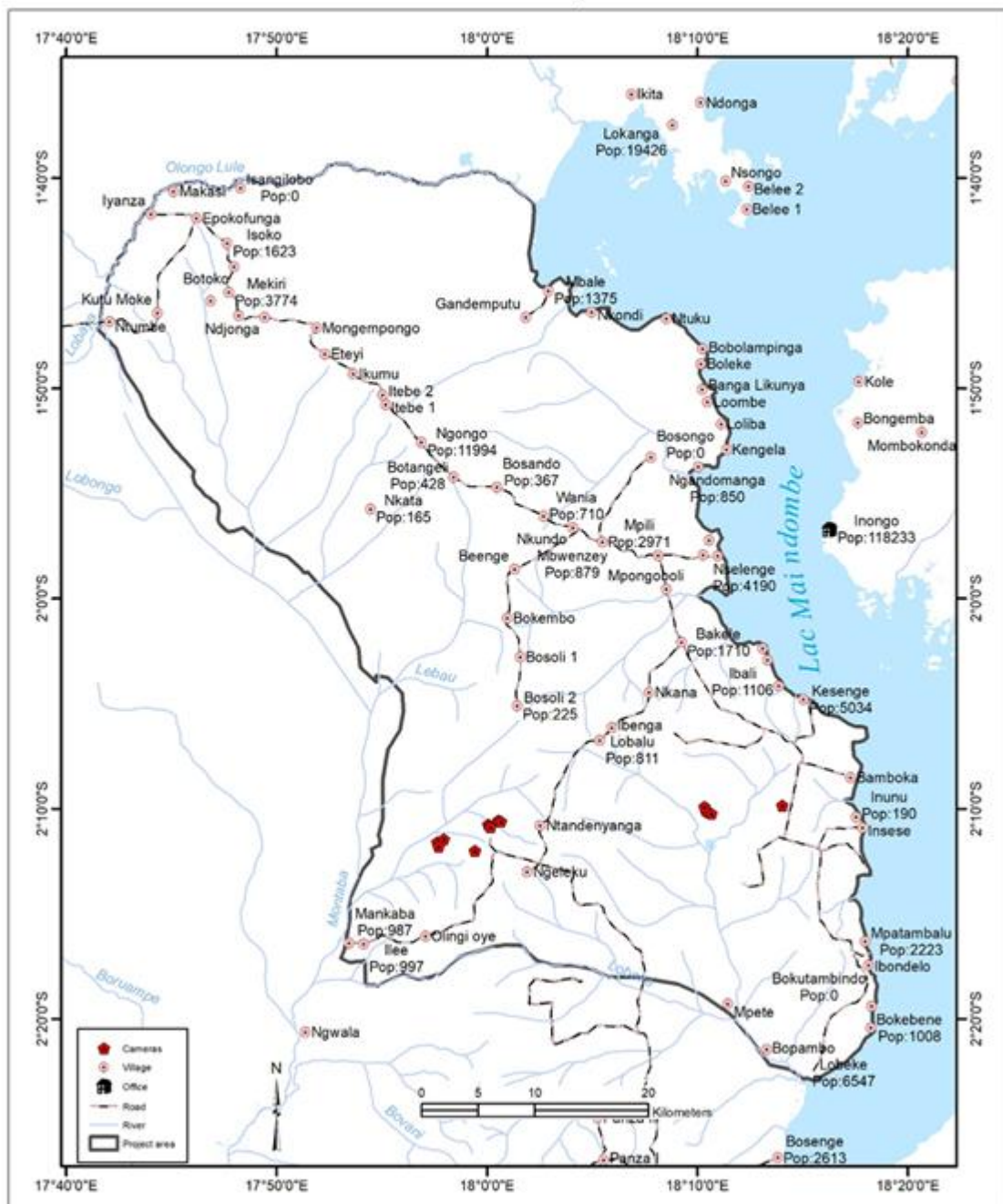


Figure 5.3 Map of the biodiversity transect lines during the M5 monitoring period



Democratic Republic of Congo

Mai Ndombe REDD concession
Project Activities
Cameras trap



Source : Service statistiques/Territoire d'Inongo
Statistiques des populations 2015

Figure 5.4 Map of the camera traps position during the M5 monitoring period



Figure 5.5 Example of bonobos seen on camera traps during the M5 monitoring period

Data collection and analysis

During this reporting period, a combination of the already established permanent line transects and guided 'recces' were used to collect data. Line transects are described in detail above, while guided 'recces' were simply walks in the forest, either as reconnaissance or between transects, where data was collected opportunistically but without the rigor of the line transect.

Biodiversity Monitoring Results

During this monitoring period (M5), changes and impacts on biodiversity have followed the projections of our causal model. The cessation of logging activities due to the project and the protection of the project area from unplanned deforestation have led to an increase in sightings of key HCVs, including forest elephants and bonobos (see below). The project continues to implement the biodiversity monitoring plan, which will allow the collection of long-term data that will provide greater clarity on the biodiversity impacts of the MNRP in the future.

As indicated in the species-specific tables under Section 5.1.1, during this M5 reporting period, the biodiversity monitoring reported numerous sightings of all key HCV species within MNRP, with bonobo (*Pan paniscus*) being amongst the top ten most encountered species (N=49 signs) across three of the forest strata (FORESCOM, SOFORMA and Undisturbed forest) surveyed in 2022.

Encounters with HCV species signs in 2022

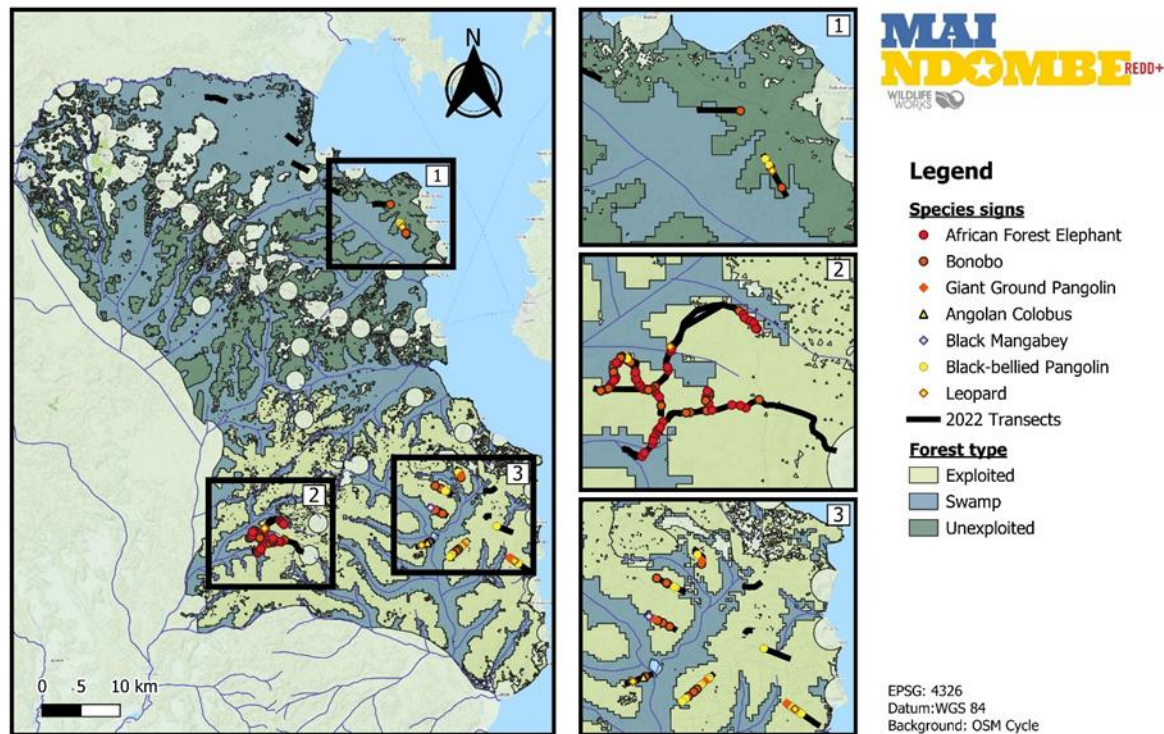


Figure 5.6 Map of systemic transects and recces surveyed in 2022 and the encounter with HCV species. The left-side map shows the entire PAA, while the right-side maps are the areas where transects were performed, zoomed to facilitate the visualization. The numbers in each right-side map correspond to the area equally numbered in the left side map.

Overall, the top three most common species whose signs were encountered across all transects were: Bay duiker (*Cephalophus dorsalis*, N=161 signs), Red River Hog (*Potamochoerus porcus*, N=134 signs), and African Brush-tailed Porcupine (*Atherurus africanus*, N=117 signs). Most species were widely distributed across the four strata surveyed and reccé, but some occurred in a single stratum, like the African forest elephant (*Loxodonta cyclotis*), which was only recorded within FORESCOM (N=66 signs). Similar to previous monitoring periods, most of the wildlife records were based on signs, particularly footprints and tracks but also nests; rarely were animals observed (1.3%) or heard (1.5%) during the transects. This could suggest that, although signs are increasing, they remain in low densities overall.

The monitoring team reported an increase in animal encounters along transects compared to previous years, and the area of animal activity is expanding, especially for HCV species, elephants and bonobos (Figure 5.7). Most female bonobos seen in camera traps had babies, which suggests a decrease in poaching and persecution within the concession, leading to

animal reproduction without human pressure. On the other hand, the increasing numbers and range of elephants mean their occurrence close to human habitation, which was uncommon, suggests a potential increase in human-elephant conflict. The team are working with the local communities to design and implement strategies to counter this potential negative impact.

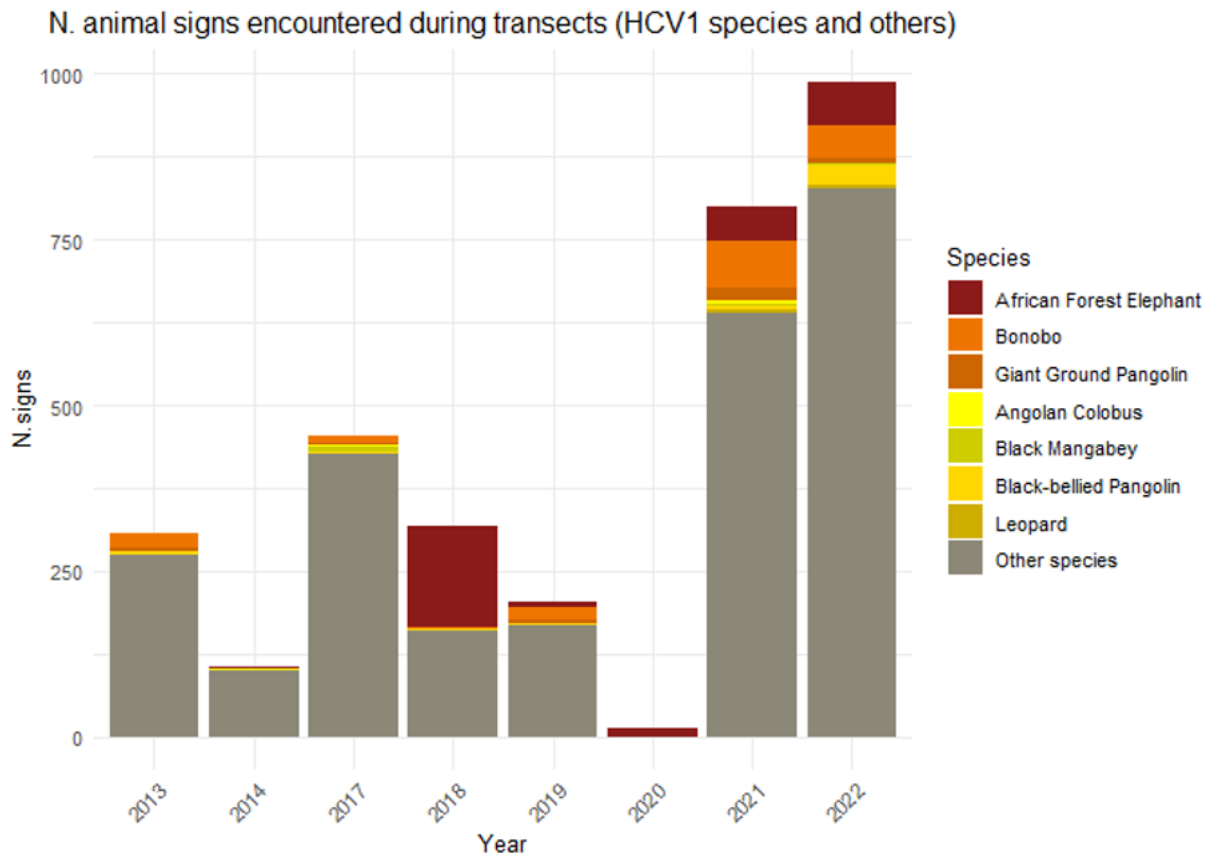


Figure 5.7. Number of animal signs encountered during transects over lifetime of Mai Ndombe REDD+ Project.

The data surveys on the market and ports of Inongo show a drop in animal species coming from the concession in comparison to 2020, suggesting that the project's environmental awareness, sensitisation and education efforts are bearing fruit. High Conservation Value (HCV) species were not recorded in the consumer market this year (Figure 5.8)

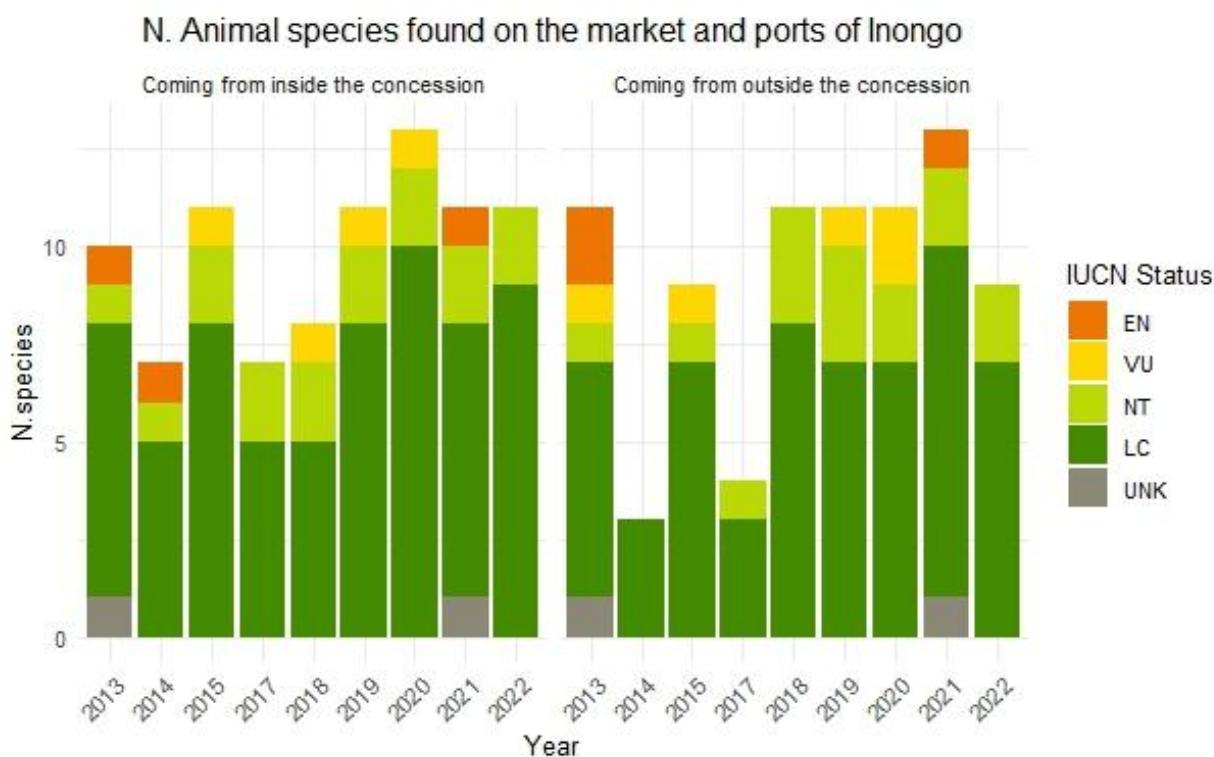


Figure 5.8. Number of species in markets coming from in and outside of the concession.

Transect Data: By Species

During the M5 reporting period in 2022, the team monitoring biodiversity team collected data in 27 transects (24 systematic transects and three recces (R.B, R.QE, and R.L)), covering over 70.9 km in 101 hours between February and December. The systematic transects were located in 4 forest strata: Exploited (Forescom) (N.encounters= 353), Exploited (Soforma) (N.encounters= 280), Unexploited/Undisturbed forest (N.encounters= 112), and Swamps/Marécage (N.encounters= 154). One hundred twenty-four further encounters were recorded during the recces, totalling 1023 encounters in 2022 with signs of over 36 wildlife species. The team sampled a total of 27 transects across the MNRP in three forest strata: 11 in Forescom, 7 in Soforma, 4 in Marécage and 2 in the Undisturbed Forest with an additional three recce transects. Signs encountered belonged to mammals (971 signs from 28 species), birds (17 signs from 8 species) and humans (35 signs). Bay duiker (*Cephalophus dorsalis*, N=161 signs), Red River Hog (*Potamochoerus porcus*, N=134 signs), and African Brush-tailed Porcupine (*Atherurus africanus*, N=117 signs), Blue Duiker (*Philantomba monticola*, N=111 signs), and Sitatunga (*Tragelaphus spekii*, N=75 signs) (Figure 5.5).

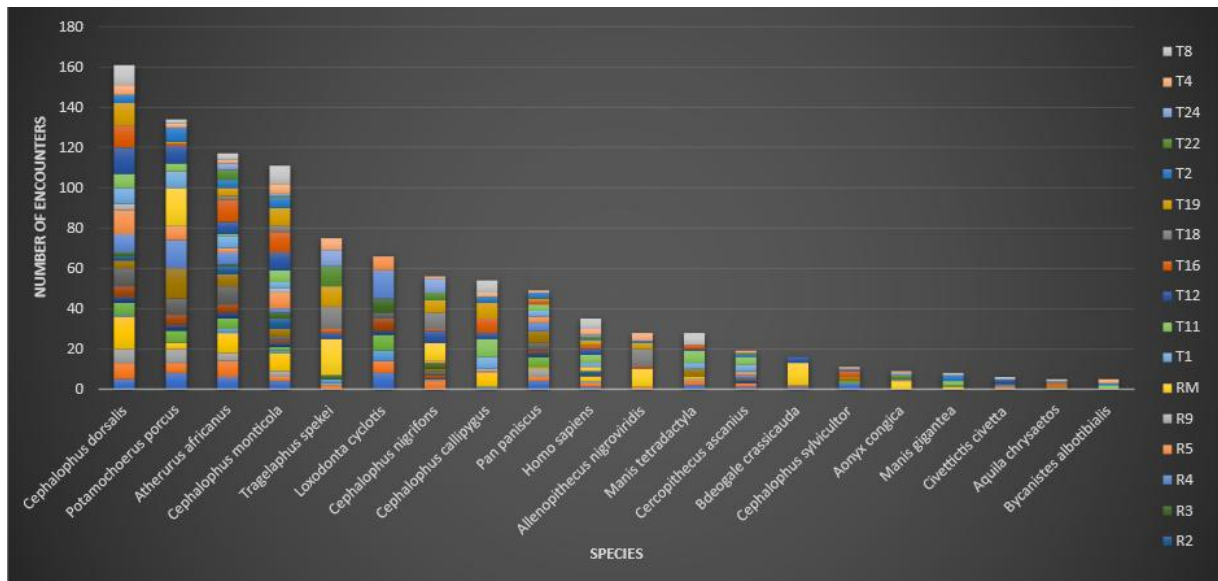


Figure 5.9 Encounter rates of the top 20 most common species recorded from the transect surveys in the MNRP in 2022

Transect Data: By Strata

Based on forest strata, Forescom had the highest total encounters (353 from 11 transects) compared to Soforma (280 from 7 transects), Swamps/Maricage (154 from 4 transects) and Undisturbed forest (112 encounters from 2 transects) in 2022. The highest rate of wildlife signs found per kilometer of transect was in the Unexploited forest (24.6 signs/km), followed by the swamps (22 signs/km), Soforma (16.6 signs/km) and Forescom (10.8 signs/km).

Most species were widely distributed across the four strata surveyed, but some occurred in single strata, like the African forest elephant (*Loxodonta cyclotis*) which was still only recorded in Forescom. (NB: The recce transects were all in this stratum) (Figure 5.6). Bonobos (*Pan paniscus*) and leopards (*Panthera pardus*) occurred in all the strata except Swamps/Maricage.

Most of the wildlife records (82%) were based on footprints, tracks or passages as well as feed. Rarely were the wildlife observed (1.3%) or heard (1.5%) (Figure 5.10 and Figure 5.11).

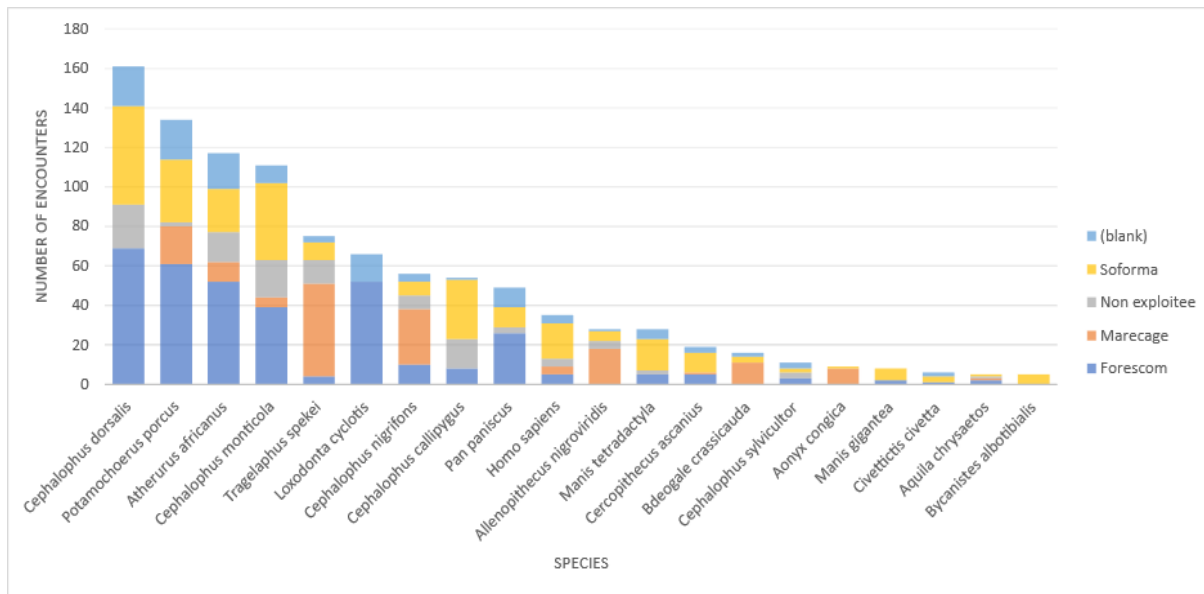


Figure 5.10 Encounter rates of the top 20 most common species recorded in 2022 within the sampled strata during the M5 wildlife surveys in the MNRP

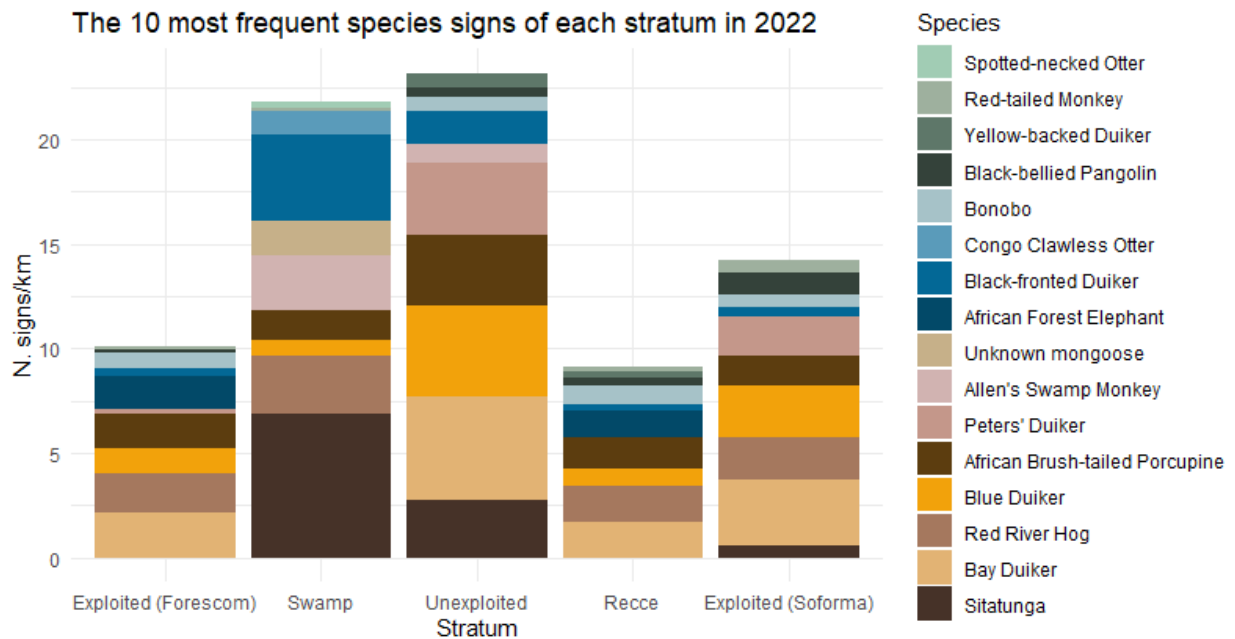


Figure 5.11 Species encounters per strata

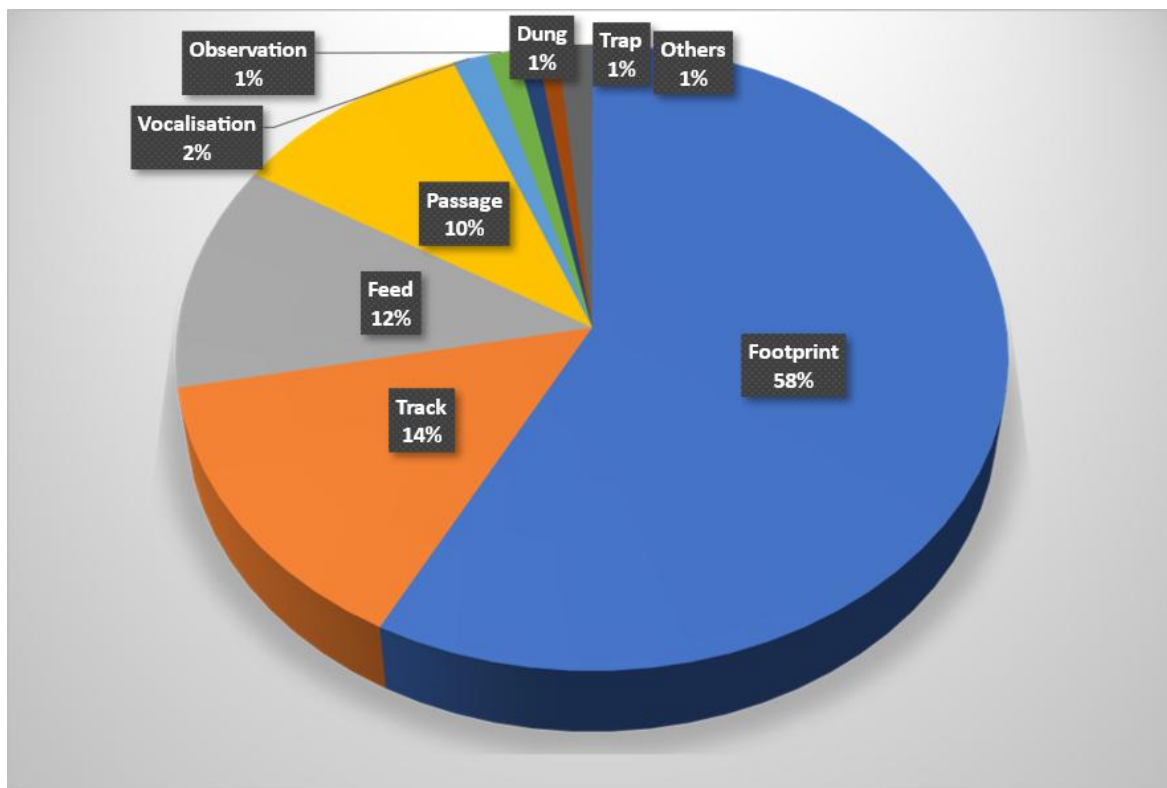


Figure 5.12 Mode of encounter for all species recorded from the transect surveys in 2022 in the MNRP

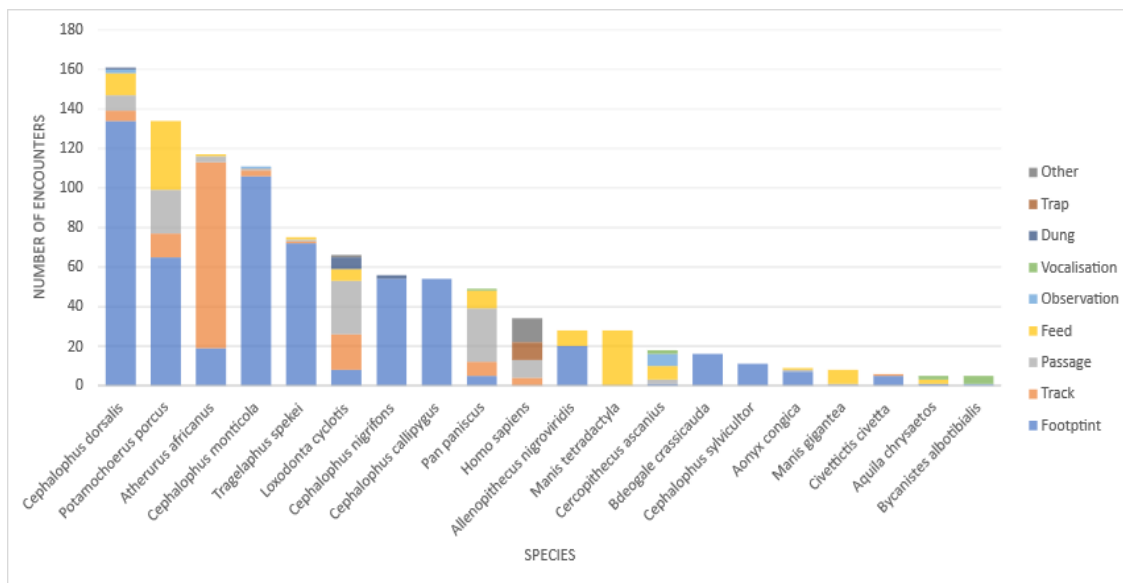


Figure 5.13 Mode of encounter for the top 20 most common species recorded from the transect surveys in 2022 in the MNRP.

Transect Data: Human Activity

During the transect surveys, 35 human-related activities or signs were recorded in the four strata: Forescom 5, Soforma 18, Swamp/Marecage 4, Unexploited/Undisturbed Forest 4 (Figure 2.1). Most of these were traps or snares (9), tracks and passages (13), slaughtered carcasses (5) and cartridges (3) (Figure 5.15).

Human Activity Signs-2022

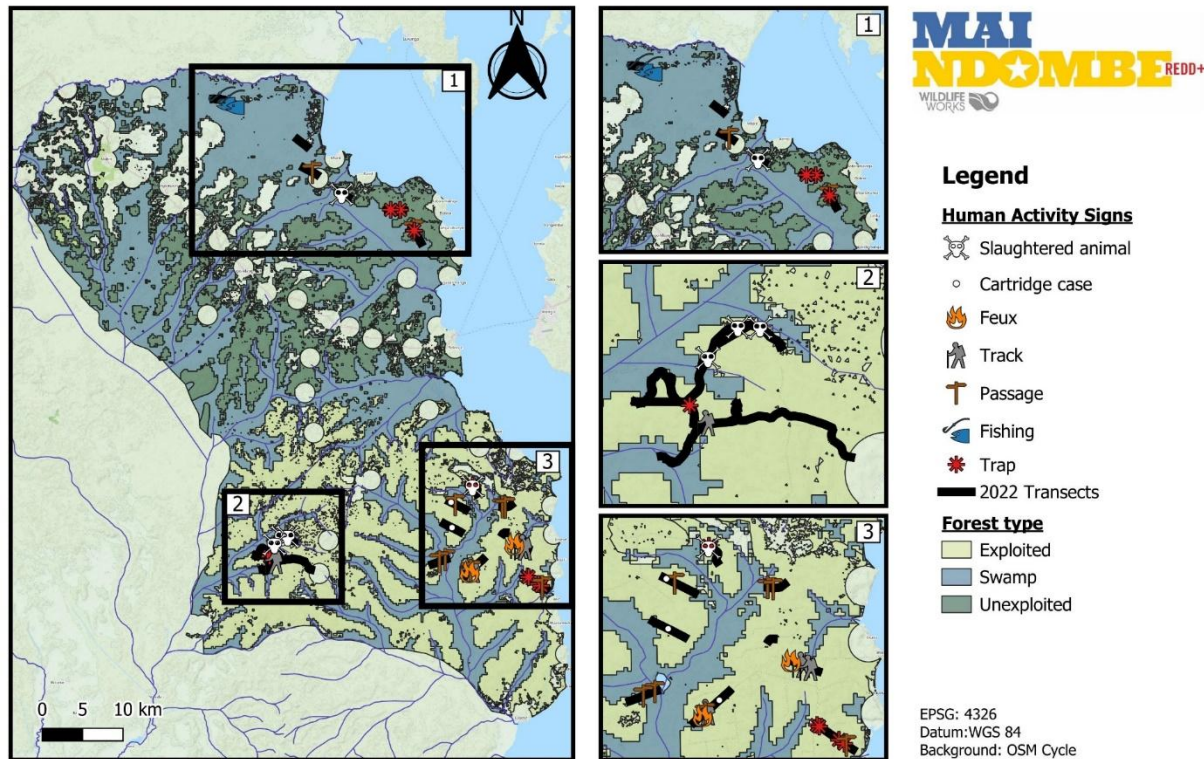


Figure 5.14 Map of human activity signs encountered during transects and recces in 2022

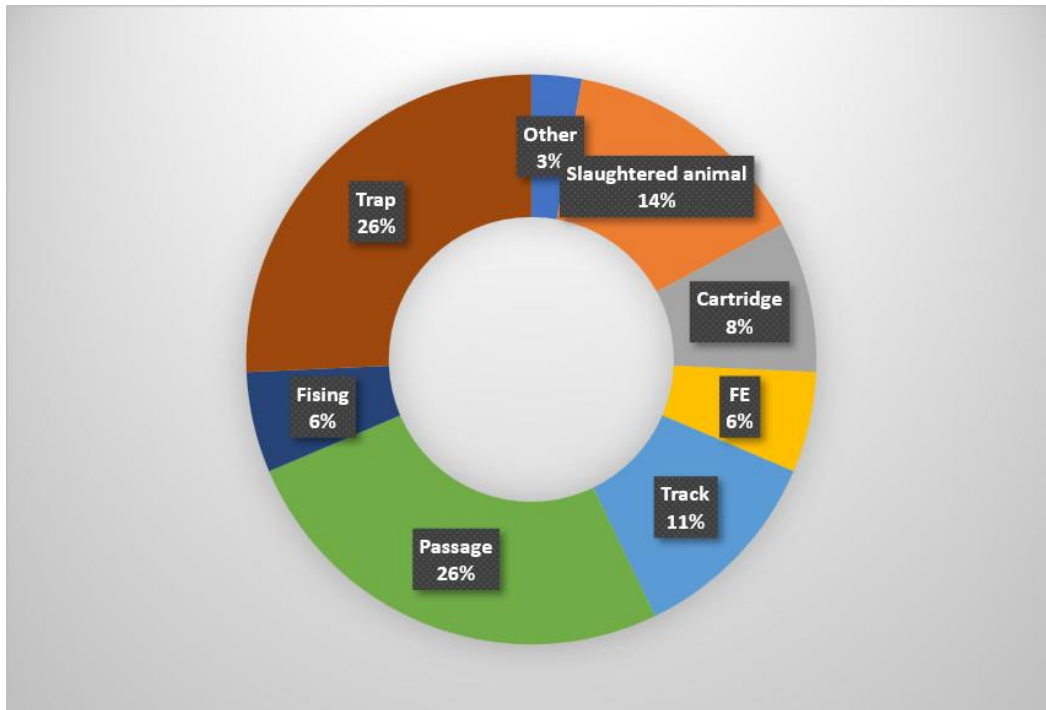


Figure 5.15 Nature of human signs and activity recorded during the transect surveys in 2022 in the MNRP

Market Survey Data

A total of 21 market surveys were carried out in 2022 between February and July, at the following five major markets: Grand marche Inongo 7, Port Isaka 2, Port Nkolenzoba 5, Port TSF 6 and Marche Likwangola 1 (Figure 5.16).

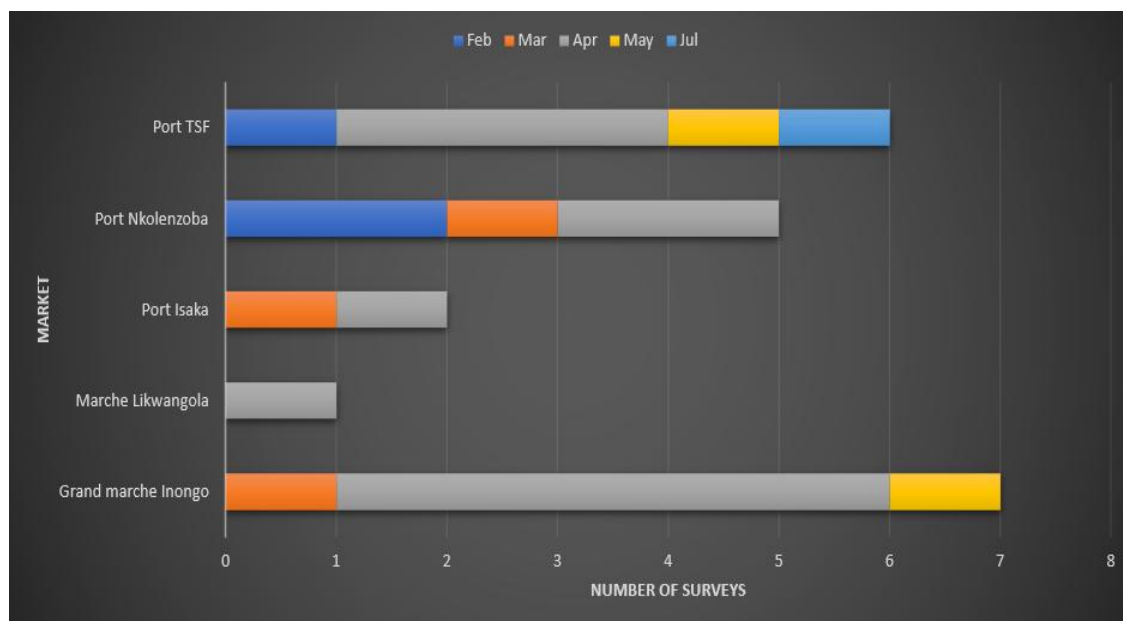


Figure 5.16 Monthly market surveys undertaken at the five major markets around the MNRP in 2022

A grand total of 233 wild animals of 12 species were counted during the market surveys in 2022 during this monitoring period: Grand marché Inongo 78 individuals of 11 species, Port Isaka 16 individuals of 4 species, Port Nkolenzoba 47 individuals of 6 species, Port TSF 75 individuals of 8 species, and Marché Likwangola 17 individuals of 5 species. None of the species found in the markets in 2022 is in a threatened category (i.e. CR, EN and VU) of the IUCN red list.

The top five most common species in the markets were: African Brush-tailed Porcupine (*Atherurus africanus*), Bay Duiker (*Cephalophus dorsalis*), Blue Duiker (*Philantomba* (syn. *Cephalophus*) *monticola*), Allen's Swamp Monkey (*Allenopithecus nigroviridis*), and Sitatunga (*Tragelaphus spekeii*). (Figure 5.17).

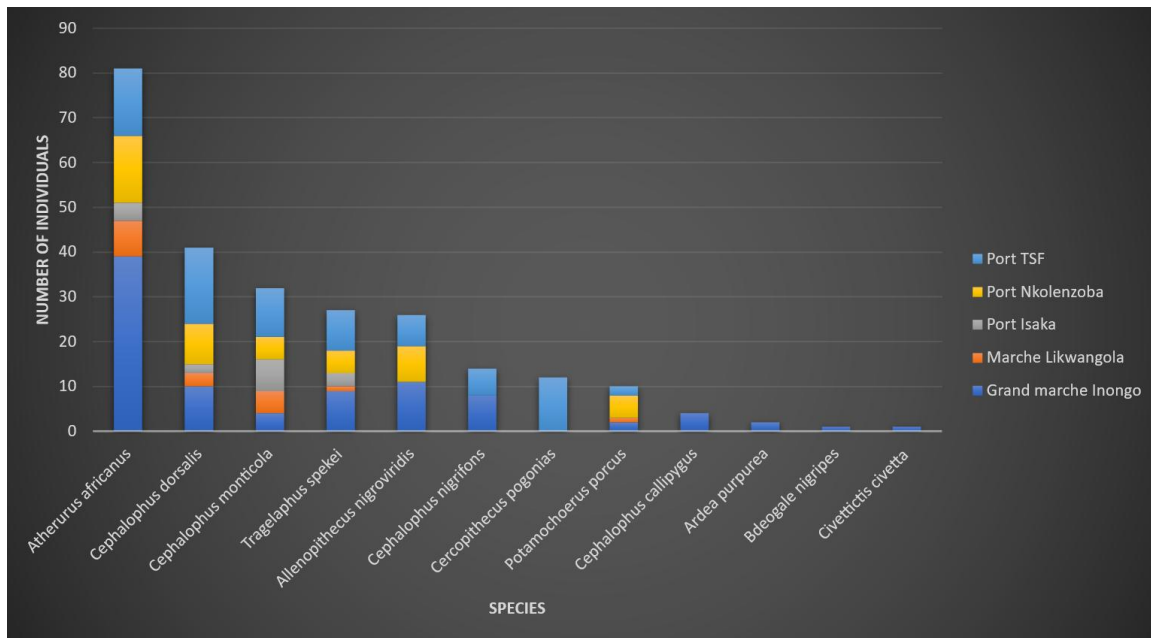


Figure 5.17 Wildlife species counted during the market surveys at the five major markets around the MNRP in 2022

The wildlife recorded at the five markets was said to have originated from 17 villages in and around the MNRP. The top-five most commonly mentioned villages were Kesenge (N=70 records), Bakele (N=28 records), Mbale (N=28 records), Bosoli and Iballi (Figure 5.13).

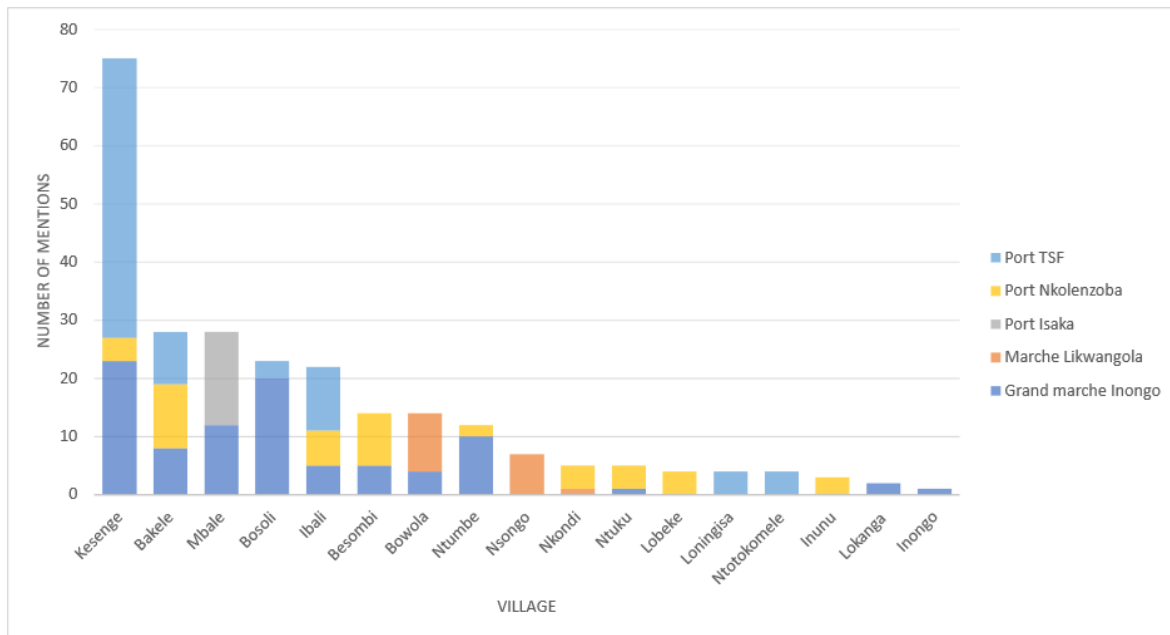


Figure 5.18 Villages mentioned as origins of the wild animals at the five markets surveyed around the MNRP in 2022

5.3.2 Biodiversity Monitoring Plan Dissemination (CCB V3, B4.3; CCB V2, B3.3)

The Biodiversity Monitoring Plan has been established and accepted by the Project Proponent. The Plan was made available for public review at the project office and each CLD in the Project Zone. The full results of the biodiversity monitoring are included in this project monitoring report, and a hard copy is available for review at the MNRP Project Office. A report summary has been provided to communities throughout the Project Area in English, French and Lingala. The monitoring report was posted on the VCS/CCB website as part of the 30-day public comment process during the period of 30th November 2023 to 30th December 2023.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

Vulnerability: Critically Endangered (CR) and Endangered (EN) species - presence of at least a single individual (GL3.1)

As is discussed in the CCB PDD Section GL3.1, the Project Area is home to significant populations of bonobos (*Pan paniscus*), which are an IUCN Red List Endangered species. The Project Area additionally has small populations of forest elephants (*Loxodonta cyclotis*), an IUCN Red List Critically Endangered species and Giant Ground Pangolin (*Smutsia gigantea*), an IUCN Red List Endangered species.

5.4.1 Trigger Species Population Trends (CCB V3, GL3.2, GL3.3; CCB V2, GL2.2, GL2.3)

Trigger Species	African Forest Elephant (<i>Loxodonta cyclotis</i>) - CR
With-project Scenario	The population of forest elephants in the DRC has declined dramatically in the past 20 years, primarily due to industrial logging. Forest elephants had been extirpated from the PAA before the start of the MNRP. Conversion of areas of the PAA from logging to conservation management, employment of eco-guards from the community, and use of biodiversity monitoring and enforcement has seen the return of forest elephants (<i>Loxodonta cyclotis</i>) since 2014. The elephants come from the neighbouring logging concessions which are noisy and dangerous. Specifically in M5, signs of this species were the 6th most commonly encountered, and the animals were frequently recorded by camera traps.
Trigger Species	Bonobo (<i>Pan paniscus</i>)-EN

With-project Scenario	Bushmeat hunting and human-induced habitat loss from commercial hunting and slash and burn agriculture are among the major threats facing bonobos. Several activities in the MNRP have helped to maintain and enhance bonobo populations including removing logging threat, protection of the forest, provision of alternative livelihoods and incomes to reduce bushmeat demand, and human-wildlife conflict mitigation/management. In this monitoring period, their traces were the 9th most common found during transects and are frequently recorded by camera-traps with infants and juveniles, suggesting population growth.
Trigger Species	Giant Ground Pangolin (<i>Smutsia gigantea</i>)-EN
With-project Scenario	Unsustainable hunting and poaching for bushmeat and use in traditional medicine are the primary threat to giant ground pangolins. Several major actions undertaken by the project to safeguard pangolin populations in the PAA. Conversion of the concession from logging to conservation has helped safeguard this species' habitat. Provision of alternative incomes and livelihoods and enhancing on-farm protein sources has helped to reduced bushmeat demand, leading to reduction of pangolin hunting in the area. In this monitoring period, pangolin traces were the 16th most common found during transects. Market surveys have shown a drop in animal species coming from the concession and HCV species such as pangolins are now rarely recorded in the consumer market.
Trigger Species	Black-bellied or Long-tailed Pangolin (<i>Phataginus tetradactyla</i> - VU
With-project Scenario	Like the giant ground pangolin, unsustainable hunting and poaching for bushmeat and use in traditional medicine are the primary threat to black-bellied pangolins. Several major actions undertaken by the project to safeguard pangolin populations in the PAA include forest protection, provision of alternative incomes and livelihoods, and enhancing on-farm protein sources. These have helped to reduce bushmeat demand, leading to a reduction of pangolin hunting in the area. Market surveys in M5 have shown a drop in animal species coming from the concession and HCV species such as pangolins are now rarely recorded in the consumer market.

APPENDIX 1: NEW PROJECT AREAS AND STAKEHOLDERS

The Mai Ndombe REDD+ Project is not a grouped project, so there were no new project areas and stakeholders. Therefore, this appendix is not applicable.

APPENDIX 2: PROJECT RISKS TABLE

The project risks, their potential impact, and the mitigation measures taken during the monitoring period are outlined in Section 2.3.5 of this document.

APPENDIX 3: COMMERCIALY SENSITIVE INFORMATION

Section	Information	Justification
3.1.1 3.1.2	Carbon Inventory Standard Operating Procedures (SOPs)	The parameters monitored in the project's forest inventory and a general outline of the activities are included in the project's carbon monitoring plan. However, the actual forest inventory SOPs are commercially sensitive as they represent proprietary scientific and technical sampling methods developed by WWC. Protecting the specific sampling methods ensures that no one can use the methods developed by WWC to their own advantage to the detriment of the project.
3.2	Carbon Model	The methods for quantifying the GHG emission reductions generated by the project are provided in accordance with the requirements of the methodology used by the project. However, the Carbon Model workbook itself is considered commercially sensitive as it contains proprietary scientific and technical calculation methods developed internally by WWC. The protection of the specific calculation methods ensures that no one can use the methods applied by WWC to benefit themselves to the detriment of the project.

3.2	Net Emissions Reductions (NERs) Calculation Workbook	The methods for quantifying the GHG emission reductions generated by the project are provided in accordance with the requirements of the methodology used by the project. However, the actual Carbon Model workbook is considered commercially sensitive as it contains proprietary scientific and technical calculation tools developed internally by WWC. The protection of the specific calculation methods ensures that no one can use the methods applied by WWC to benefit themselves to the detriment of the project.
3.1.1 3.1.2	Climate Monitoring Plan	The monitoring report outlines the parameters that will be monitored in the project's forest inventory and provides a general outline of the activities included in the project's carbon monitoring plan. However, WWC considers it necessary to protect the details of the sampling plan, including the locations of the inventory plots, so that no one can try to tamper with them or damage the project.
2.4.4 2.5.6	Financial Information, including the Project's Financial Model	All financial information relating to the project is considered commercially sensitive. WWC has provided the auditors with a financial model for the project to demonstrate the overall financial health of the project and to support the risk ratings applied for the financial viability risk category. The project's financial information is considered to be highly sensitive, the disclosure of which would affect community confidentiality agreements and could also be used to the detriment of the project community and WWC.

2.5.1	WWC Agreement with the Mai Ndombe community.	The agreement signed between WWC, and the Mai Ndombe community is considered commercially sensitive and the confidentiality of the agreement is contained in its clauses. Several clauses within the agreement are considered to contain commercially sensitive content, such as those relating to WWC's obligations, conditions for execution of the agreement, investments after ratification of the agreement and after validation, and the benefit-sharing plan within the agreement.
2.5.6		

APPENDIX 4: ALLOMETRIC EQUATIONS

A literature review revealed some equations for estimating biomass of trees that were developed in forests close to the project area and similar to forests in the project area. These equations are considered for predicting biomass of trees in the project area and proxy areas. Ebuy et al. (2011) published allometric equations using destructive sampling of three species in the Yangambi area (Orientale Province) in the Democratic Republic of the Congo. Djomo et al. (2010, 2011) have also built and tested allometric equations in the lowland forest of Cameroon (Campo-Ma'am forest). However, Ebuy et al. had only a small sample size, and trees only up to 52 cm DBH. Djomo et al. analyzed trees only up to 79 cm DBH. The Lac Mai Ndombe REDD+ project needs to predict diameters greater than 1.5 m DBH. Using allometric equations to estimate the biomass of trees larger than the trees used to develop the equations gives unreliable estimates. Therefore, additional work was needed to validate existing allometric equations.

There are 294 separate tree species in the project's forest inventory, and it is necessary to calculate biomass for all species. Existing research, both published in the scientific literature and conducted by Wildlife Works indicates that, for trees of somewhat similar growth form, reliable estimates of tree biomass can be made using diameter and specific gravity (Enquist et al. 2000, Enquist 2002, Chave et al. 2005). To keep work tractable while still generating reliable biomass and carbon stock numbers, we chose to measure trees in the project area to support selection and validation of published biomass equations.

VM0009, version 2, section 9.3.1.1 specifies how to validate allometric equations used to estimate biomass for the project. The methodology has several requirements with respect to validation of allometric equations.

MRR.92 A list of all selected allometric equations used to estimate biomass for trees and non-trees

The MNRP uses a single allometric equation to estimate the biomass of all trees in the Project Area. This single equation is used for all trees and all tree species in the PAA. The selected biomass equation is model II.2, from Chave et al. (2005):

$$AGB = e^{-1.602 + (2.266 \ln(DBH)) + (0.136 \ln(DBH)^2) + (-0.0206 \ln(DBH)^3) + (0.809 \ln(\rho))}$$

Where AGB is aboveground biomass in kg, DBH is diameter at breast height in cm, and ρ is wood density in g/cm³.

Non-tree and lying dead biomass are not included as a carbon pool in the MNRP.

MRR.93 For each, the number of trees (or non-trees) destructively sampled and the location where the measurement were made relative to the project area.

As documented in MRR.92, the MNRP uses a single allometric for all trees in the Project Area. Therefore, the Chave et al. (2005) model II.2 listed above is applied to all tree species included in the inventory. The Chave et al. (2005) equation is applied to 100% of the carbon stock.

MRR.94 For each selected allometric equation, indication of when it was first employed to estimate carbon stocks in the Project Area (monitoring period number and year of monitoring event).

There is one single allometric equation use in the project, as detailed in MRR.92 and 93. This equation was first employed to estimate carbon stocks in the project area in the first monitoring period (m1) covering the monitoring period (14 March 2011-31 October 2012). The same allometric equation has been utilized to estimate carbon stocks in the project area for every subsequent monitoring period. No other allometric equation has been employed.

MRR.95 For each selected allometric equation, indication of whether it was validated per section 9.3.1.1 or 9.3.1.2.

The methodology states that if the allometric equation, or equations used were not developed in an area similar to the Project area or are from a biome-wide database, then it/they must be verified utilizing field measurements from the Project area, or an area similar to it. The selected model was previously developed in existing peer-reviewed literature and is therefore validated under section 9.3.1.1 of the methodology VM0009 v2.

MR.96 Documentation of the source of each selected allometric equation and justification for their applicability to the project area considering climatic, edaphic, geographical and taxonomic similarities between the project location and the location in which the equation was derived.

Model II.a from Chave et al. 2005 was selected for application to 100% of the trees measured in the MNRP forest inventory. The Chave et al. (2005) models were specifically developed to be used in forests located in the tropics. The appropriateness of the Chave et al. (2005) models to be used in the Democratic Republic of the Congo is demonstrated by the fact that these models have become common and generally accepted for use in the country's and surrounding region's scientific and forestry communities. This is

underscored by research that reinforces the validity of these equations when compared to measurements made with destructive harvests in central Africa (Fayolle et al. 2013), (Henry et al. 2010). Fayolle et al. (2013) concluded that the Chave et al. (2005) equation can be used to produce accurate biomass and forest carbon assessments from on-site diameter measurements and external information about wood specific gravities by species.

Through validation and a corresponding derivative test required in VM0009 section 9.3.1.1, the selected model was deemed accurate to the MNRP Project area. The selected Chave et al. (2005) equation was validated using field data from the Mai Ndombe project area using a non-destructive, 'many-diameters' method for estimating biomass. The equation predicts biomass within 13% of the measured biomass using the ratio of sums method from section 9.3.1.1, which falls below the +/-15% requirement specified by the methodology. As the largest tree in the destructive harvest sample is 2 cm smaller in DBH than the largest tree in the inventory (188.7 cm vs 190.7cm), the methodology requires demonstration of additional criteria. The measured biomass for the largest tree in the sample (DBH 188.7 cm) is lower than the predicted biomass by the selected equation Chave model II. The derivative for the largest tree in the inventory was 85% higher than the derivative for the largest tree in the sample (242.6 kg/cm vs. 449.7 kg/cm). We therefore elected to conservatively cap DBH for the carbon inventory at the value of the largest tree in the validation sample set (188.7 cm). It should be noted that only one trees from the inventory had a DBH larger than the largest tree in the validation sample set, so for that tree's DBHs (190.7 cm) was conservatively changed to 188.7 cm. The allometry validation worksheet containing the abovementioned calculations has been provided to the auditor.

MR.99 A field protocol used to measure destructively sampled trees (or non-trees).

The equations validated here are used for calculating biomass at the time of the start of the project. It is anticipated that the equations and model coefficients presented here will be used for the life of the project. The equations are validated per Section 9.3.1.1 of the methodology VM0009 v2.0. The equations and coefficients are developed from trees growing within the project area, and thus are applicable to the project area and to other sites with similar climatic, edaphic, geographical and taxonomic conditions.

There are 335 known separate tree species in the project's forest inventory, and it is necessary to calculate biomass for all species. Existing research, both published in the scientific literature and conducted by Wildlife Works indicates that, for trees of somewhat similar growth form, reliable estimates of tree biomass can be made using diameter and specific gravity (Enquist et al. 2000, Enquist 2002, Chave et al. 2005). To keep work tractable while still generating reliable biomass and carbon stock numbers, we chose to measure trees in the project area to support selection and validation of published biomass equations.

At the time of project development species-specific wood density values were available for trees that composed 62% of the basal area in the inventory. Biomass of species for which no wood density is published was estimated using the weighted average wood density of the species with known densities. This weighting was done by using the proportion of the inventory of each species, counted by basal area. The weighted average wood density is calculated as 0.616 g/cm³. To see a list of every tree species observed and the specific gravity value utilized for the species please see table Appendix 7.1 in Appendix 7.

To select and validate allometric equations, detailed measurements were made of sample trees within the project area. These measurements were used to calculate the volume of each tree bole. The biomass of the bole was calculated from the volume, using the appropriate wood density. The ratio of branch and foliage biomass to bole biomass, as a function of tree diameter, was calculated using the equation for hardwoods published in Jenkins et al. (2003). Jenkins et al. conducted a meta analysis using 2,456 biomass equations.

Preparing for fieldwork, the assessed the range of tree diameters occurring in the forest inventory was determined. Diameters ranged from 10 cm (the minimum diameter measured) up to 146.4 cm DBH. The most frequent six species in the inventory composed more than half of the basal area in the inventory. Selection of trees for sampling required a good distribution of tree sizes, with a focus on sampling the common species. Approximately 1/3 of the sampled trees were 10-50 cm DBH, 1/3 were 50-100 cm DBH, and 1/3 were greater than 100 cm DBH. Using local knowledge, trees up to 188.7 cm DBH were found and sampled. Coordinates of sampled trees and field protocols used to collect data are on file with Wildlife Works and are available for review by validators and verifiers.

Developing and fitting allometric equations requires that trees be measured that are at least as large as the largest trees to which the equation will be applied. At the same time, there are very few very large trees. In this analysis, to get enough sample trees in the top 20% of the tree diameter range required sampling every tree we could find with a diameter above 120 cm DBH. Because we refuse to cut down every known large tree in the forest (for various reasons, not the least important of which is the message it sends to local project stakeholders that it is ok for us to cut down large trees in the name of science, but at the same time we are requesting that they cease all such activity), sampling methods were designed to work without cutting down trees. Crews searched for large, recently fallen trees, and measured these trees. Also, methods were tested to document that we could accurately measure standing trees without cutting them down, and standing trees were measured without damaging them.

To avoid damage to trees, they could not be cut down to make measurements of their upper parts. It is possible to climb trees and make measurements while climbing. However, climbing trees is hazardous, risking potentially fatal falls. Also, climbing often damages trees, causing breaks in the cambium that can be locations where rot enters the tree, with the possible eventuality of killing the tree. To avoid these problems, it is highly desirable to make all measurements from the ground. Diameters of tree boles above DBH were made from the ground using a Relaskop. A Relaskop is an instrument that accurately measures angles, and adjusts for slope. Using the distance of the observer from the tree, diameter can be calculated. Relaskops have been around for decades and are well-tested forestry instruments. Some people regard Relaskops as outdated now that laser instruments for measuring diameter are available. However, when measuring points high in trees it is often very difficult to obtain a clear line of sight to the point where the measurement is needed. A skilled forester with a Relaskop can often obtain an accurate diameter measurement at a point high in a tree, where a computer laser would be confused by intervening vegetation between the laser and the diameter that is intended to be measured.

Relaskops do require skill to obtain accurate measurements. If a Relaskop is used, the accuracy of the measurements of each technician should be tested. Technician accuracy is tested by having a different person measure the tree diameter at the same point, with the second measurement made with a diameter tape or caliper, and comparing the values obtained with the Relaskop and the tape or caliper. A caliper can give an exact comparison because the caliper can measure the horizontal distance observed with the Relaskop. However, calipers are rarely used for diameters greater than 50 cm because of the difficulty of finding large calipers and carrying them in the woods. Because trees are not exactly circular in cross section, diameter measured by tape is typically somewhat large or smaller than a single diameter measured with a caliper or Relaskop, depending on whether the large or small diameter of the oval tree trunk is observed.

The accuracy of measurements made with the Relaskop was tested by having different technicians measure the diameter of trees at breast height (1.3 m), $\frac{1}{4}$ of the height of the bole, $\frac{1}{2}$ of the bole height, and $\frac{3}{4}$ of the bole height. On average, the diameters measured with a diameter tape were 0.42 cm greater than the diameters measured with the Relaskop. In percentage terms, the average difference was only 0.5%. In forestry, errors of less than 1% of diameter measurement are generally considered to be less than the precision of measurement methods. Over 90% of the measurements were within 1.8 cm of each other, and only one pair of measurements was different by more than 2.9 cm. These differences are remarkably small, given that trees are not round, and these Relaskop measurements are a single measurement, not the average of two diameter measurements made perpendicular to each other.

Table Appendix 4.1: Differences in diameters measured with a Relaskop versus a diameter tape, at different point on the tree bole. Difference calculated as tape diameter minus Relaskop diameter.

Height of measurement	Difference, cm	Difference, %
1.3 m	0.73	0.8%
¼ of bole height	0.31	0.3%
½ of bole height	0.22	0.2%
¾ of bole height	-1.10	-1.2%
Average, weighted, all measurements	0.42	0.5%

86 trees were measured to validate allometry for this project. The methodology requires that at least 30 trees be measured to validate an existing allometric equation.

An efficient and well-documented approach to quantifying log volume is to measure the diameters of the ends of a log (or bole segment) and the middle of the log, and calculate the volume of that section of bole using Newton's formula (Wegner 1984, West 2003):

$$V = (\pi/24) \times (D_0^2 + [4D_{1/2}] + D_1^2) \times L$$

In this equation, V is the volume in cubic meters, D0 is the diameter at the base of the log section for which volume is being estimated, D1/2 is the diameter at the midpoint of the log section, and D1 is the diameter at the top of the section (diameters in meters) and L is the length of the log section in meters. In this analysis, volume is calculated separately for the top and bottom halves of the tree bole.

Newton's formula is accurate for trees that flare at the base (neiloid shape), trees that are straight (conic shape) or trees that are bulging or bullet shaped (paraboloid shaped) because of the weighting of the middle diameter measurement in the volume calculation.

Making these calculations required measuring bole diameter at five points on the tree, the base, $\frac{1}{4}$ of the way up the bole, $\frac{1}{2}$ way up the bole, $\frac{3}{4}$ of the way up the bole, and the top of the bole. Newton's formula was used to separately calculate the volume of the bottom half of the tree and the top half of the tree. The volumes of the two parts of the tree bole were summed to calculate the total bole volume.

We were concerned that measurements of the cross sectional area (which is the effective diameter) of large trees would be very difficult to make at ground level because of extensive buttressing of roots, resulting in a very complex tree cross-sectional shape at ground level. For accuracy, the cross-sectional area "footprint" of the tree at ground level is assumed to be the same as the cross sectional area of the tree at DBH height. Because trees taper with height, particularly with buttressing, this assumption is conservative because it does not overestimate tree diameter at the base.

Although Newton's formula is well accepted in forestry, GHG offset validators and verifiers may not be familiar with it. Thus we compared volumes calculated by Newton's formula and the volumes calculated by treating the bole as five conic sections. The five conic sections are ground to DBH (assuming that this section is a cylinder with diameter equal to DBH), DBH to $\frac{1}{4}$ height, $\frac{1}{4}$ to $\frac{1}{2}$ height, $\frac{1}{2}$ to $\frac{3}{4}$ height, and $\frac{3}{4}$ height to the top of the tree. On average, volumes calculated by assuming that trees were composed of perfect conic sections were 0.2% less than the volumes calculated using Newton's formula. We believe that this difference results from the conic method underestimating the volume of the bulging upper quarter of the bole, and the exclusion of estimated buttressing between ground level and DBH, because of the assumption that from ground level to DBH that trees are a cylinder with the diameter of DBH.

MR.100 Justification that the field protocol for the destructive measurement method conservatively estimates biomass.

Biomass is estimated by multiplying the tree volume by the published specific gravity of the wood of the species of each tree.

The ratio of total aboveground biomass to bole biomass is calculated as the ratio of total aboveground biomass to the sum of bole wood mass and bole bark mass. Jenkins et al. (2003) used 2,456 biomass equations to develop broadly applicable equations for predicting the biomass of tree components as a function of tree type and tree diameter. Scaling up from bole mass to total aboveground tree mass is:

$$ABG_{ratio} = 1 / (BoleWood + BoleBark)$$

In this equation ABG_{ratio} is the ratio of total aboveground biomass to total bole biomass, BoleWood is the fraction of the total aboveground mass of the wood in the bole, and BoleBark is the fraction of the total aboveground mass of the bark of the bole.

Substituting in equations for hardwoods given in Jenkins et al. (2003)

$$ABG_{ratio} = 1 / \left[EXP \left(-0.3065 + \left(-5.4240 / DBH \right) \right) + EXP \left(-2.0129 + \left(-1.6805 / DBH \right) \right) \right]$$

This equation was used to calculate the total aboveground biomass of trees from the bole biomass, where the bole biomass was calculated from tree measurements using the procedures described above. Resulting total aboveground tree biomass values for the measured trees were provided to the VVB in supplemental material.

We searched the literature for biomass equations that were developed from trees in forests similar to project forests, and for equations applicable to large trees. We also obtained height, diameter, and biomass data for very large trees (up to 112 m in height and 6.4 m DBH) and constructed allometric equations for very large trees. More than 20 equations were analyzed. Biomass of project trees was compared to the biomass predicted for project trees by the allometric models. VM0009 v2 states that projects can use published allometric equations if they predict biomass within +/- 15%, or an adjustment factor must be applied. Biomass was compared using the “ratio of the sums” method specified in the methodology.

When applied over the range of tree diameters that occur in the project inventory, only one equation predicted biomass within +/-15% of the observed biomass of sample trees. The equation that accurately predicted biomass is model II.2, from Chave et al. (2005). This model predicted biomass within 13.0% of measured biomass, meeting the requirement of the methodology.

A common problem is that allometric models tend to predict the biomass of large trees to be greater than measured biomass. If models are applied to trees larger than the trees used to create the model, often predicted biomass numbers are vastly overestimated. This model does not have this problem. Considering the six largest trees measured, which are all greater than 130 cm DBH, the model predicted the biomass to be 0.2% less than the measured biomass. Thus it appears that it would be conservative to apply the model to trees larger than the sample trees used to validate the model, if such trees occur in a future inventory.

The model that predicts biomass with the required accuracy is model II.2 from Chave et al. (2005):

$$ABG = e^{-1.602 + (2.266 \ln(DBH)) + (0.136 \ln(DBH)^2) + (-0.0206 \ln(DBH)^3) + (0.809 \ln(\rho))}$$

Where AGB is aboveground biomass in kg, DBH is diameter at breast height in cm, and ρ is wood density in gm/cm^3 .

Comparison of the tree biomass estimated by each model versus biomass calculated from tree measurements was provided to the VVB in supplemental material. The measured and predicted biomass amounts are shown graphically in Figure Appendix 4.1 below.

MR.101 For each allometric equation in the list, a figure showing all the destructive measurements of biomass compared to predicted values from its selected allometric equation.

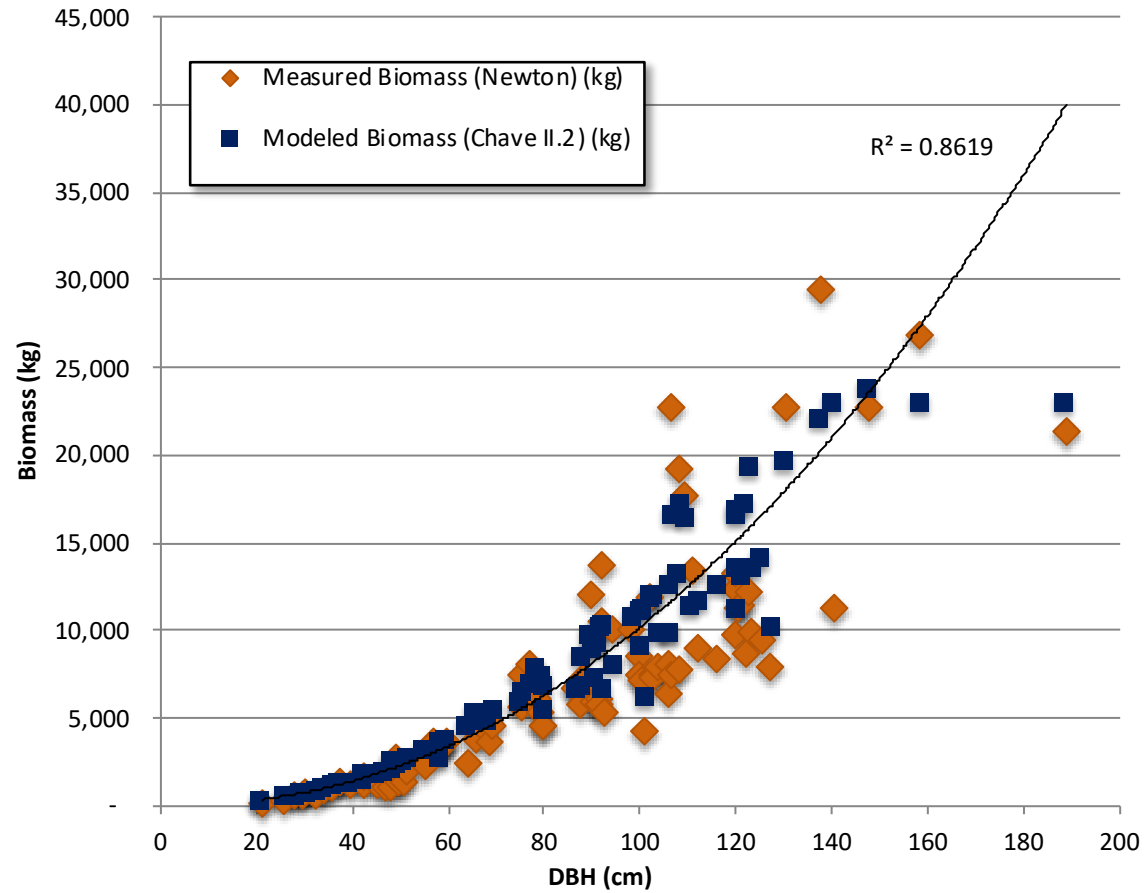


Figure Appendix 4.1: A figure showing all the measured measurements of biomass compared to predicted values from its selected allometric equation

APPENDIX 5: EVIDENCE FOR SDG CONTRIBUTIONS

Line Number	SDG target	SDG indicator	Net impact on the SDG indicator	Contributions to ongoing projects (2022)	Evidence
1)	1.4	1.4.1 Proportion of the population living in households with access to basic services	Activities implemented to increase	During the monitoring period, access to basic services improved through the construction of five schools, the repair of bridges in the project area, the digging of 21 wells, and the establishment of mobile medical clinics, a VHF radio network and emergency medical response systems	Photos
2)	1.4	1.4.2 Proportion of the total adult population with secure land rights, a) with legally recognized documents,	Activities implemented to increase	Participatory mapping to inform land management and election and training of 120 members of 8 Local Development Committees (LDCs) in charge of local land governance	Minutes of the validation of the participatory mapping of the clans and village terroirs located in the ERA Congo concession and the geographical coordinates of the boundaries of these territories.

		and b) who perceive their land rights as secure, by gender and type of land tenure			Capacity building report for the village's CLD members.		
3)	2.3	2.3.2 Average income of small-scale food producers	Activities implemented to increase	In 2022, a second farming village was set up in Nkondi village after testing the concept in Loombe village. During this monitoring period, 51% of households adopted new farming methods, disintegrating new crops, livestock pens or agroforestry, and a 69% increase in productivity was reported.	Report on the Nkondi Agricultural Village and distribution sheet of inputs and plant material		
4)	2.4	2.4.1 Proportion of agricultural area devoted to productive and sustainable agriculture	Activities implemented to increase	During M5, 26 demonstration gardens were established, and trained agricultural extension workers worked with community members throughout the project area for the production of cash crops (e.g., onion and tomatoes). A total of 2110 community members visited the demonstration gardens during this monitoring period.	The log of daily visits by community members		
5)	3.3.	Establishment of health centres and provision of medicines to	Activities implemented to reduce	Through a partnership with the local government, the project has committed to establishing, equipping and deploying five mobile clinics in 2022. The clinics aim to control epidemics and provide medicines to local health	Processing Report: <table><tr><td>Village</td><td>Treatment</td></tr></table>	Village	Treatment
Village	Treatment						

		combat epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases, as well as hepatitis, water-borne diseases and other communicable diseases		facilities and improve these facilities. We treated and cured 503 children with measles	Loombe	05 - 09 Dec 2022	
					Nsongo	Dec 10 -16, 2022	
					Lokanga	Dec 17-30, 2022	
					Ikita	Dec 17-30, 2022	
6)	3.8.	3.8.1 Coverage of essential health services	Activities implemented to increase	The project improved health services for 15,707 people in 2022.	Health Report Fiscal Year 2022		
7)	3.b	3.b.1 Proportion of the target population covered by all vaccines included in their national programme	Activities implemented to increase	The establishment and equipping of mobile clinics in the project area resulted in the vaccination or treatment of 775 patients in 2022	Vaccination report:		
					Village	Vaccination	
					Loombe	09-10 November 2022	

					Nsongo	November 11 -12, 2022	
					Lokanga	November 13-15, 022	
8)	3.b	3.b.3 Proportion of health facilities with a basic package of relevant essential medicines available and affordable on a sustainable basis	Activities implemented to increase	The project facilitated the creation, repair and equipping of five small clinics in 2022	Equipment handover report		
9)	4.1	4.1.2 Completion rate (primary, lower secondary, upper secondary)	Implement activities to increase	Investments in education in the project area have led to an increase in the number of students graduating with a state diploma (upper secondary education). In 2022, 850 students obtained a state diploma	Official Journal of State Graduates of the Year obtained at the Provincial Inspectorate of Education of Mai Ndombe, including a few pages in the appendix and the list of which can also be found on the website of the Ministry of Education.		

10)	4.5	4.5.1 Gender indices (gender, rural/urban, lower/upper wealth quantile and others such as disability, indigenous peoples and conflict-affected people), as data become available for all education indicators on this list that can be disaggregated	Activities implemented to increase	During the fifth monitoring period, the project improved access to education or employment, health and quality of education, clean water, and livelihoods for women and girls. Of the 2,323 people employed by the project, 904 were women. The project also improved the livelihoods of 325 people, benefiting 211 women. Health services have been improved for 8,502 women out of 15,707, access to education or the quality of education for 3,709 women out of 7,920 and access to drinking water for 9,507 women out of 13,500.	Agents' payroll, teachers' payroll, field payment for all work and day laborers. 2022 Health Report. Statistical table of students for the 2022 exercise. Population statistics 2022, Civil Registry of Inongo territory.
11)	4.a	4.a.1 Proportion of schools providing basic services, by type of service	Activities implemented to increase	The project completed the construction/renovation of five schools serving 7,920 beneficiaries in 2022.	2022 Infrastructure Service Activity Report

12)	4.c	4.c.1 Proportion of teachers with minimum qualifications, by level of education	Activities implemented to increase	In 2022, the project employed 700 new teachers in local schools.	Payroll
13)	6.1	6.1.1 Proportion of population using safely managed drinking water services	Activities implemented to increase	During the monitoring period, 21 new water wells were built or repaired to provide safe drinking water to 27,615 members of the local community.	In 2022, we installed 14 boreholes and 7 repaired boreholes in 21 villages. 27615 is the total number of the population living in these 21 villages. The source of the demographic statistics: the Civil Registry Service of the territory of Inongo.
14)	8.5	8.5.2 Unemployment rates, by sex, age and persons with disabilities	Activities implemented to reduce	The project created eight jobs across its operations in 2022.	Contracts of these eight employees
15)	8.8	8.8.1 Fatal and non-fatal occupational injuries per	Activities implemented to reduce	The company held an occupational health and safety training session in 2022, during which 20 employees were trained on OSH. No OHS	Training report for Era-Congo WWC agents on the use of the fire extinguisher in the service environment.

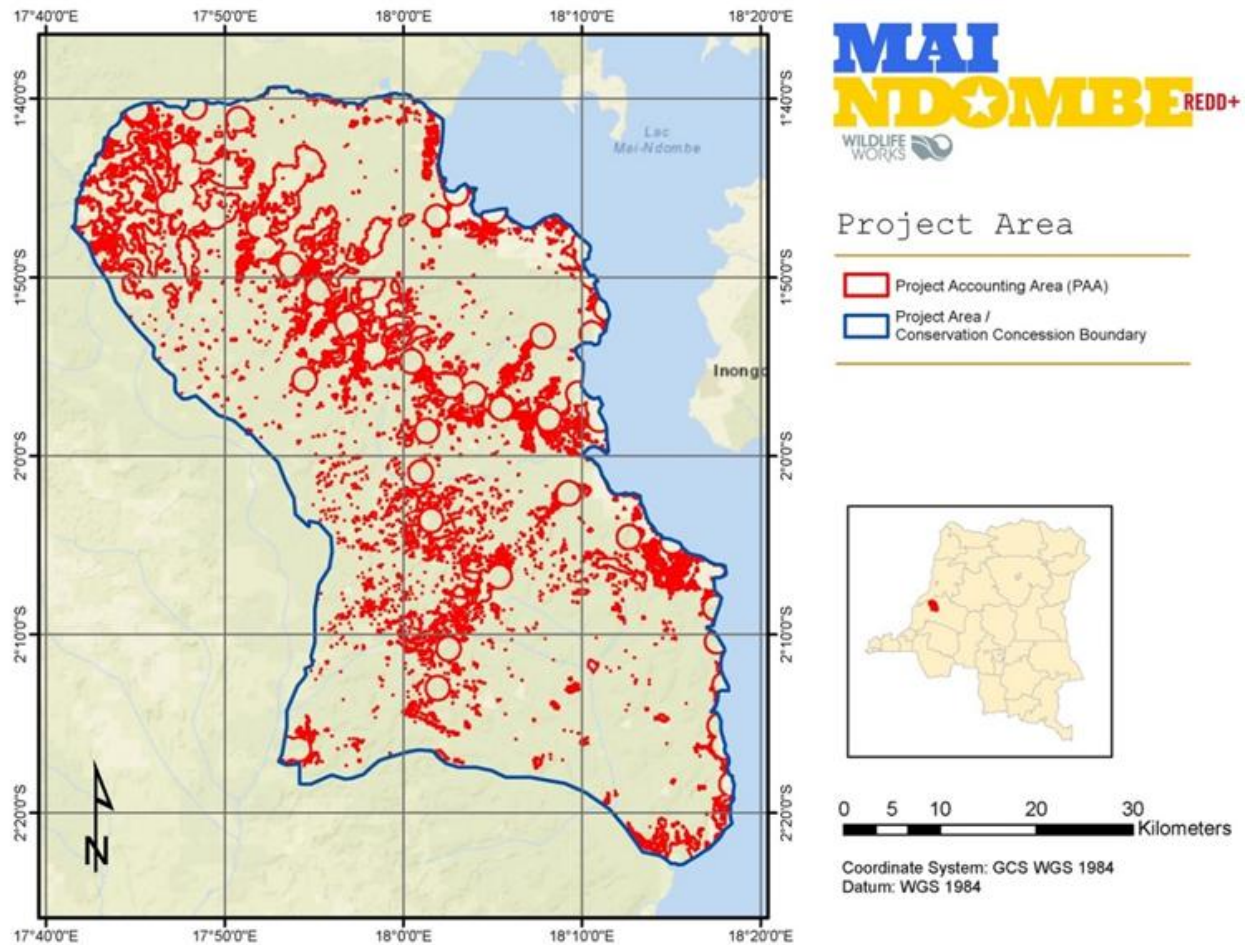
		100,000 workers, by sex and migration status		incidents were reported across project activities in 2022.	
16)	9.1	9.1.2. Passenger and cargo volumes, by mode of transport	Activities implemented to increase	The project continued to fund and support 8 passenger boats in order to offer free transport services to local community members and their goods. The boats transported 218 community members across Lake Mai Ndombe during the monitoring period.	Navigation logbook.
17)	13.2	13.2.2 Total greenhouse gas emissions by year	Activities implemented to reduce	During the monitoring period, the project emitted 4,782,428 net tons of CO ₂	NER calculation workbook
18)	15.1	15.1.1 Forest area as a proportion of total land area	Activities implemented to increase	The project protected 248,956 ha of forest up to and during the monitoring period through the prevention of deforestation and forest degradation	
19)	15.2	15.2.1 Progress towards sustainable forest management	Activities implemented to increase	The project signed one (1) forest conservation concession contract with supporting documentation in 2022. This document enables the community to sustainably manage and use its natural resources according to its own modes of governance and supports sustainable forest management when implemented	Concession contract signed

				alongside the company's REDD+ model, which is co-designed and managed with the local community.	
20)	15.5	15.5.1 Red List Index	Activities implemented to reduce	The project protected 3 species listed as endangered or critically endangered on the IUCN Red List by protecting habitats and reducing threats to these species during the monitoring period: the bonobo (<i>Pan paniscus</i>), the giant terrestrial pangolin (<i>Smutsia gigantea</i>) and the forest elephant (<i>Loxodonta cyclotis</i>).	Camera trap data and other biodiversity monitoring results
21)	15.7	15.7.1 Proportion of wildlife species subject to poaching or illegal trafficking	Activities implemented to reduce	During this monitoring period, the project continued a number of activities aimed at reducing poaching: biodiversity monitoring, provision of alternative livelihoods and incomes to reduce the demand for bushmeat, and market studies to monitor bushmeat trade activities in the local market and in the port of Inongo. In 2022, 30 permanent transects were established in the five major forest strata to monitor large mammals, birds, and human activities, including poaching, and 21 market studies were conducted.	Biodiversity monitoring results, market research, camera trap data (Figures 5.2-5.5; 5.8, 5.16-5.18)
22)	15.c	15.c.1 Proportion of the community pursuing sustainable	Activities implemented to increase	The project carried out ten awareness-raising meetings on biodiversity and natural resource management with a total of 675 people trained. The project also provided support to boost alternative protein sources (including the introduction of two fish farms and livestock	General report of the awareness-raising meetings on biodiversity and natural resource management

	livelihood activities and alternative protein sources (user- defined indicator)	pens in a village during the monitoring period) to reduce dependence on bushmeat).
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APPENDIX 6: PROJECT MAPS

PROJECT AREA AND PROJECT ACCOUNTING AREA



APPENDIX 7: TREE SPECIES AND SPECIFIC GRAVITY VALUES

Table Appendix 7.1: All tree species observed in the project area forest inventory and the associated specific gravity value used for the species.

Tree Species Name	Specific Gravity g/cm ³
Afzelia bella	0.616
Afzelia sp	0.616
Aidia congolana	0.616
Akene	0.616
Albizia adianthifolia	0.616
Albizia ferruginea	0.538
Albizia gummifera	0.616
Albizia sp	0.616
Allanblackia floribunda	0.807
Allanblackia marienii	0.616
Allanblackia sp	0.616
Allanblackia stanerana	0.561
Alstonia congensis	0.375
Amphimas pterocarpoides	0.726
Angylocalyx pyraetii	0.655
Angylocalyx sp	0.616
Aningeria altissima	0.474
Aningeria robusta	0.540
Aningeria sp	0.616
Annona sp	0.616
Anonidium mannii	0.290
Anopyxis ealensis	0.616
Anopyxis klaineana	0.740
Anthocleista schweinfurthii	0.616
Anthocleista sp	0.616
Anthonotha fragrans	0.616
Anthonotha macrophylla	0.780
Antiaris toxicaria	0.616
Aphania senegalensis	0.616
Aphanocalyx margininervatus	0.616
Aphanocalyx microphyllus	0.616

Aphanocalyx sp	0.616
Arungana madagascariensis	0.450
Autranella congolensis	0.720
Baphia dewevrei	0.616
Baphia sp	0.616
Barteria nigritana	0.616
Barteria sp	0.616
Beilschmiedia congolana	0.616
Beilschmiedia gilbertii	0.616
Beilschmiedia sp	0.616
Berlinia acuminata	0.616
Berlinia bracteosa	0.616
Berlinia confusa	0.616
Berlinia congolensis	0.616
Berlinia grandiflora	0.701
Berlinia sp	0.616
Blighia welwitschii	0.740
Bois mort	0.616
Bolongoto	0.616
Bombax buonopozense	0.616
Brachystegia laurentii	0.450
Caloncoba crepiniana	0.616
Caloncoba glauca	0.616
Caloncoba sigmatosa	0.616
Caloncoba sp	0.616
Caloncoba welwitschii	0.616
Canarium schweinfurthii	0.400
Canthium sp	0.616
Canthium oddonii	0.616
Carapa procera	0.590
Celtis gomphophylla	0.446
Celtis mildbraedii	0.800
Celtis soyauxii	0.635
Celtis sp	0.616
Celtis tesmannii	0.616
Chaetocarpus africanus	0.616
Chrysophyllum africana	0.616
Chrysophyllum altissima	0.616
Chrysophyllum lacourtiana	0.616

Chrysophyllum sp	0.616
Chytranthus macrobotrys	0.616
Cleistanthus mildbraedii	0.870
Cleistopholis glauca	0.616
Cleistopholis patens	0.360
Coelocaryon botryoides	0.616
Coelocaryon preussii	0.560
Coelocaryon sp	0.616
Coffea sp	0.616
Cola gigantea	0.460
Cola griseiflora	0.616
Cola sp	0.616
Copaifera milbraedii	0.630
Cordia platythyrsa	0.340
Corynanthe macroceras	0.616
Corynanthe mayumbiensis	0.616
Corynanthe paniculata	0.616
Coula edulis	0.985
Craterispermum cerinanthum	0.616
Dacryodes edulis	0.500
Dacryodes sp	0.616
Daniella pruniformis	0.616
Daniella pynaertii	0.616
Daniella sp	0.616
Desplatsia dewevrei	0.616
Dialium bipendensis	0.616
Dialium corbisieri	0.616
Dialium excelsum	0.780
Dialium pachyphyllum	0.616
Dialium soyauxii	0.626
Dialium sp	0.616
Dichostemma glaucescens	0.616
Diclogyspremna caleorum	0.616
Didelotia letouzeyi	0.500
Diospyros crassiflora	0.779
Diospyros sp	0.616
Dracaena arborea	0.616

Drypetes gossweileri	0.630
Drypetes macrocarpa	0.616
Drypetes sp	0.616
Duguetia staudtii	0.616
Enantia chlorantha	0.420
Entandrophragma angolense	0.450
Entandrophragma candollei	0.290
Entandrophragma congoense	0.616
Entandrophragma cylindricum	0.550
Entandrophragma negro	0.616
Entandrophragma palustre	0.616
Entandrophragma sp	0.616
Entandrophragma utile	0.549
Eriocoelum microspermum	0.500
Eriocoelum sp	0.616
Erismadelphus exsul	0.560
Erythrophleum suaveolens	0.616
Estheria palvifolia	0.616
Fagara macrophylla	0.690
Ficus mucoso	0.690
Ficus sp	0.616
Fillaeopsis discophora	0.616
Fillaeopsis hylodandron	0.616
Funtumia africana	0.400
Funtumia elastica	0.370
Ganophyllum giganteum	0.696
Garcinia epunctata	0.616
Garcinia smeathmani	0.616
Garcinia sp	0.616
Gardenia imperialis	0.616
Gilbertiodendron dewevrei	0.650
Grewia oligoneura	0.616
Grewia sp	0.616
Grewia trinervira	0.616
Guarea cedrata	0.480
Guarea laurentii	0.560
Guarea thompsonii	0.550

Guibourtia demeusei	0.700
Guibourtia sp	0.616
Guibourtia tessmannii	0.740
Hallea stipulosa	0.616
Hannoa klaineana	0.280
Hedrantera barteri	0.616
Heisteria parvifolia	0.616
Hexalobus crispiflorus	0.480
Homalium africana	0.616
Homalium sp	0.616
Hua gaboni	0.616
Hunteria congolana	0.616
Hunteria sp	0.616
Hymenocardia acida	0.667
Hymenocardia sp	0.616
Hymenocardia ulmoides	0.616
Hymenostegia klainei	0.616
Inconnue	0.616
Irvingia gabonensis	0.848
Irvingia grandifolia	0.780
Irvingia robur	0.616
Irvingia sp	0.616
Isolona sp	0.616
Khaya kwakwa	0.616
Klainedoxa gabonensis	0.870
Lannea welwitschii	0.450
Lasiodiscus mannii	0.616
Librevillea klaineana	0.616
Librevillea sp	0.616
Lovoa trichilioides	0.470
Macaranga barteri	0.616
Macaranga monandra	0.616
Macaranga saccifera	0.616
Macaranga sp	0.616
Macaranga spinosa	0.616
Maesobotrya staudtii	0.616
Maesopsis eminii	0.400
Mammea africana	0.661

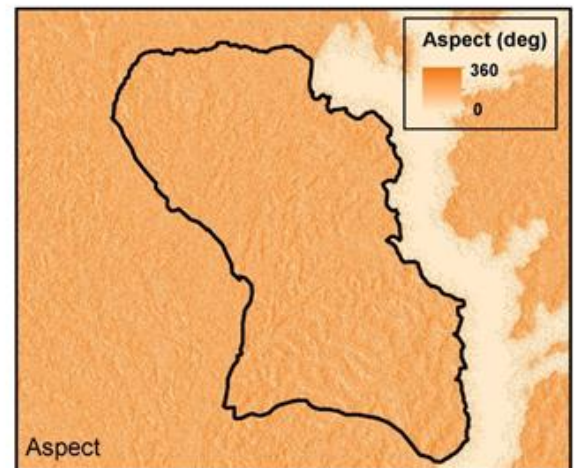
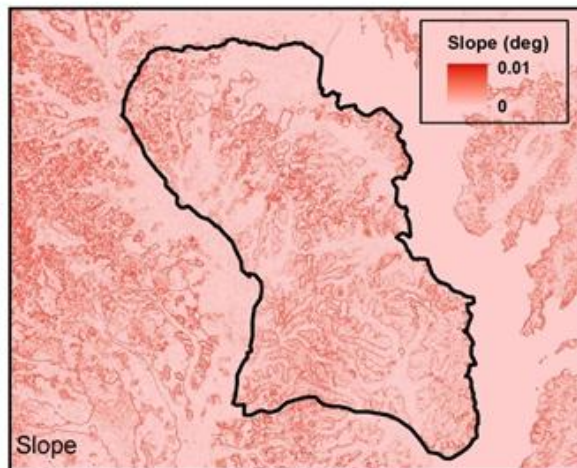
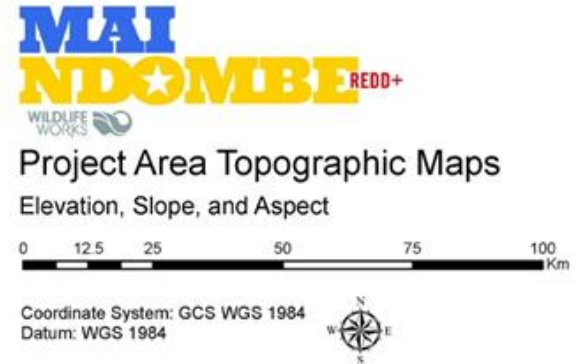
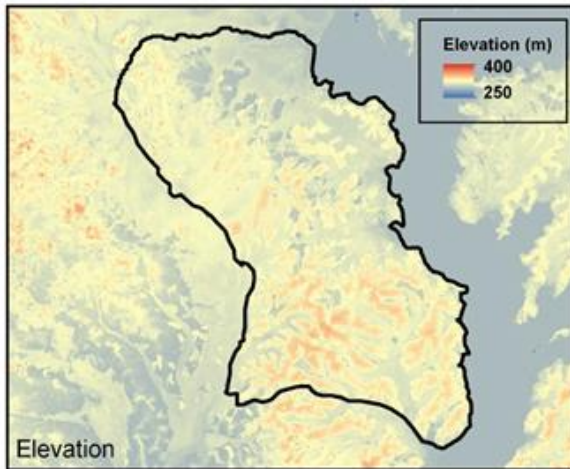
Manilkara sp	0.616
Margaritaria discoidea	0.616
Markhamia lutea	0.616
Massularia acuminata	0.616
Massularia africana	0.616
Massularia sp	0.616
Memecylon cynamoides	0.616
Microdesmis yafungana	0.616
Milicia excelsa	0.616
Milletia sp	0.616
Millettia drastica	0.616
Millettia laurentii	0.700
Monodora angolensis	0.616
Monodora myristica	0.616
Monopetalanthus dibata	0.616
Monopetalanthus microphyllus	0.616
Morinda lucida	0.616
Musanga cecropioides	0.230
Myrianthus arboreus	0.616
Nauclea diderrichii	0.630
Nauclea pobegenii	0.616
Nauclea sp	0.616
Ocomba sp	0.616
Omphalocarpum elatum	0.616
Omphalocarpum sp	0.616
Ongokea gore	0.720
Pachyelasma tessmannii	0.700
Pancovia harmsiana	0.616
Pancovia laurentii	0.616
Pancovia sp	0.616
Paramacrolobium coeruleum	0.561
Parinari excelsa	0.695
Parinari glabra	0.870
Parinari sp	0.616
Parkia bicolor	0.360
Parkia filicoidea	0.501
Pauridiantha callicarpoides	0.616
Pausinystalia macroceras	0.616

Pausinystalia sp	0.616
Pentaclethra eetveldeana	0.630
Pentaclethra macrophylla	0.780
Petersianthus macrocarpus	0.616
Phyllanthus sp	0.616
Picralima nitida	0.785
Piptadeniastrum africanum	0.560
Plagiostyles africana	0.700
Plagiosyphon sp	0.616
Polyalthia suaveolens	0.660
Protomegabaria sp	0.616
Protomegabaria stapfiana	0.616
Pseudospondias microcarpa	0.616
Pseudospondias sp	0.616
Psychotria sp	0.616
Psydrax oddonii	0.616
Psydrax orthacanthum	0.616
Psydrax sp	0.616
Psydrax vulgaris	0.616
Pterocarpus soyauxii	0.616
Pterocarpus tinctorius	0.378
Pterygota bequaertii	0.560
Pterygota macrocarpa	0.470
Pycnanthus angolensis	0.400
Pycnanthus marchalianus	0.616
Pycnanthus sp	0.616
Raphia sp	0.616
Raphia laurentii	0.616
Rauvolfia vomitoria	0.616
Rauvolphia sp	1.616
Rauvolphia macrophylla	0.616
Rhabdolphyllum sp	0.616
Rhabdolphyllum welwitschii	0.616
Rhabdolphyllum arnoldianum	0.616
Ricinodendron heudelotii	0.200
Rinorea oblongifolia	0.616
Rinorea sp	0.616
Rinorea welwitschii	0.616

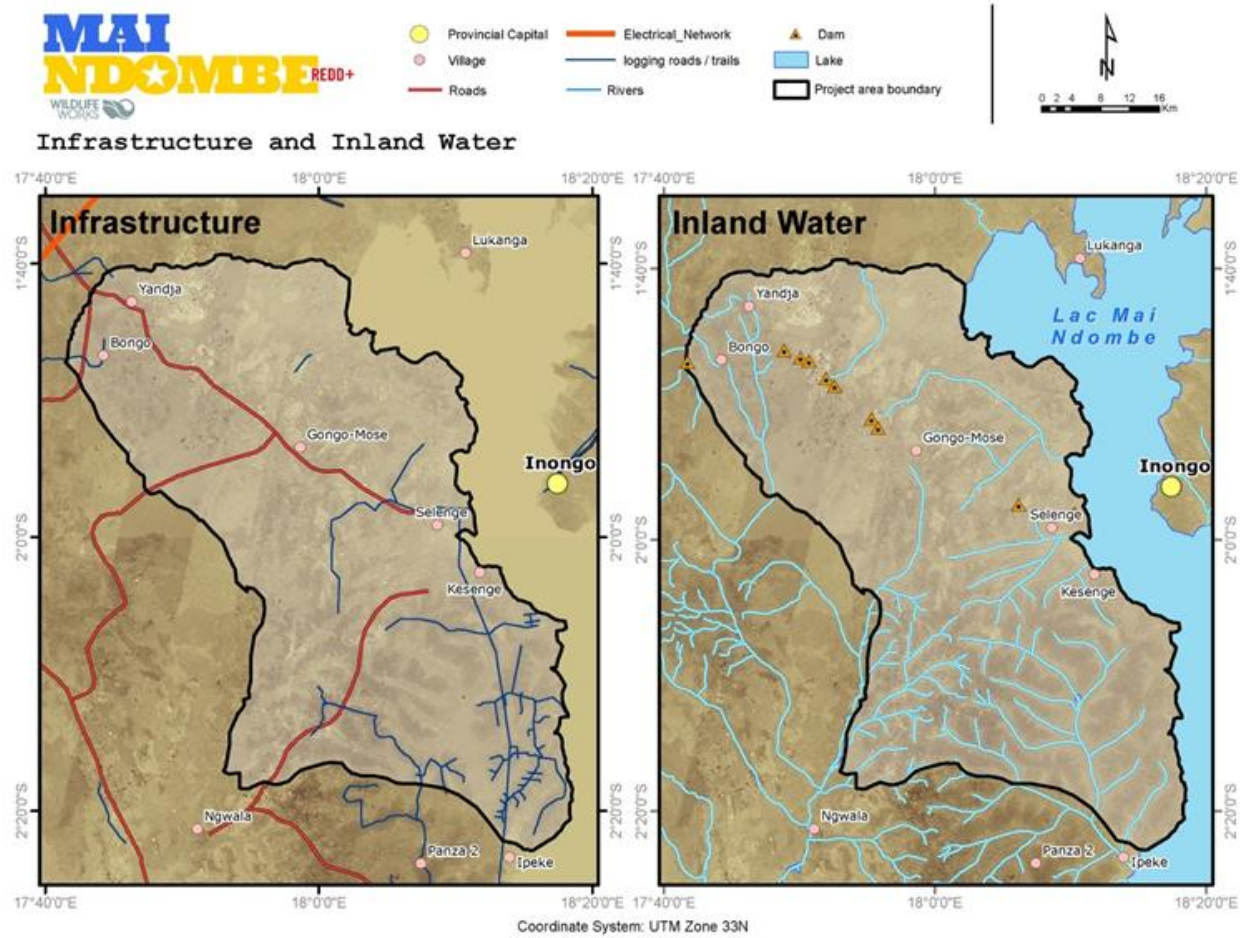
Rothmannia libisa	0.616
Sapindus sapitara	0.616
Sapindus sp	0.616
Sapium sp	0.616
Sapium cornatum	0.616
Sapium ellepticum	0.500
Sapium xylocarpum	0.616
Scorodophloeus zenkeri	0.680
Scottellia sp	0.616
Staudtia sp	0.616
Staudtia stipitata	0.750
Sterculia sp	0.616
Sterculia tragacantha	0.616
Strombosia grandifolia	0.740
Strombosia pustulata	0.616
Strombosia sp	0.616
Strombosiosis tetrandra	0.630
Sygygium guineese	0.616
Symphonia globulifera	0.580
Synsepalum stipulatum	0.616
Synsepalum subcordatum	0.616
Syzygium congolense	0.616
Syzygium staudtii	0.616
Tabernaemontana crasa	0.616
Tessmannia africana	0.850
Tessmannia lescrauwaetti	0.616
Tessmannia sp	0.616
Tetrorchidium didymostemon	0.616
Thomandersia hensii	0.616
Treculia africana	0.616
Trichilia prieuriana	0.630
Trichilia sp	0.616
Trichilia tessmanii	0.616
Trichilia welwitschii	0.616
Tridesmostemon sp	0.616
Uapaca guineensis	0.616
Uapaca heudelotii	0.616
Uapaca sp	0.616

Vitex sp	0.616
Vitex congolensis	0.446
Vitex welwitschii	0.616
Xylopi aethiopica	0.500
Xylopi hypolampra	0.630
Xylopi phloiodora	0.616
Xylopi ripicola	0.616
Xylopi rubescens	0.616
Xylopi sp	0.616
Zeyherella longipendicellata	0.616
Afzelia pachyloba	0.616
Amphimas ferrugineus	0.616
Bombax buonopozense	0.616
Ceiba pentandra	0.616
Donella pruniformis	0.616
Emune	0.616
Fagara inequalis	0.616
Ficus mucoso	0.616
Hexalobus sp	0.616
Isolona congolana	0.616
Klainedoxa sp	0.616
Macaranga laurentii	0.616
Manilkara fouilloiyana	0.616
Millettia versicolor	0.616
Monopetalanthus sp	0.616
Rhabdolphyllum gigantens	0.616
Samanea sp	0.616
Samanea leptophylla	0.616
Sorindeia gillettii	0.616
Syzygium sp	0.616
Tessmannia anomala	0.616
Zeyllon sp	0.616
Maranthes sp	0.616
Hymenostegia pellegrinii	0.616
Chaetocarpus sp	0.616
Corynanthe sp	0.616
Trema orientalis	0.616
Diguetia sp	0.616

TOPOGRAPHIC MAPS



PROJECT INFRASTRUCTURE AND INLAND WATER



LAND COVER MAP

