LISALA REDD+ PROJECT

Project title	Lisala REDD+ Project
Project ID	5671
Crediting period	01-03-2025 to 28-02-2115
Project lifetime	01 March 2025– 28 February 2115; 90-year lifetime
(CCB) GHG accounting period	01 March 2025– 28 February 2115; 90-year total period First crediting period; 01 March 2025– 28 February 2055; 30-year period
Original date of issue	22-July- 2025
Most recent date of issue	22-July- 2025
Version	Version 1.0
VCS Standard version	VCS standard 4.7
CCB Standards version	CCB standard 3.1
Project location	The Democratic Republic of Congo, Mongala Province, Lisala territory
Project proponent(s)	Taranis Operations Limited Address: 8 Hanover Square, London, United Kingdom, W1S 1HQ. Contact person: Bruno Visconti (NBS Managing Director). Email: nbs@taranis.eu Website: https://taranis.eu
Validation/verification body	Ecolance Private Limited

History of CCB status	First validation
Gold Level criteria	The Lisala REDD+ Project (the "Project") is aiming to achieve Gold Level for the Climate, Community and Biodiversity components: Climate: The Project is expected to reduce CO_2 emissions averaging 743,402 tCO_2/year, amounting to a total of 22.3 million tCO_2 over the first 30-year crediting period. The project activities aim to promote community adaptation to climate change while supporting economic development in the territories through resource management planning and the development of sustainable agricultural activities. Community: The Project benefits community members in an area of high poverty. The Project fully integrates community consultation and participation in project activities aimed at improving their living conditions and well-being. Activities include capacity building, support for resource management planning, and the development of sustainable agricultural activities. Biodiversity: The Project aims to promote habitat and biodiversity protection. Forest conservation and the reduction of pressure on forest resources through community activities will help preserve the remarkable biodiversity of these ecosystems.
Expected verification schedule	Initial verification : December 2027
Prepared by	The Shared Wood Company SAS

CONTENTS

LIST OF ACCRONYMS **4**
LIST OF FIGURES **5**
LIST OF TABLES **6**
1 SUMMARY OF PROJECT BENEFITS **9**
1.1 Unique Project Benefits 9
1.2 Standardized Benefit Metrics 9
2 PROJECT DETAILS **14**
2.1 Project Goals, Design and Long-Term Viability 14
2.2 Without-project Land Use Scenario and Additionality 51
2.3 Safeguards and Stakeholder Engagement 55
2.4 Management Capacity 79
2.5 Legal Status and Property Rights 85
2.6 Additional Information Relevant to the Project 100
3 CLIMATE **102**
3.1 Application of Methodology 102
3.2 Quantification of Estimated GHG Emission Reductions and Removals 127
3.3 Monitoring 173
3.4 Optional Criterion: Climate Change Adaptation Benefits 219
4 COMMUNITY **222**
4.1 Without-Project Community Scenario 222
4.2 Net Positive Community Impacts 226
4.3 Other Stakeholder Impacts 230
4.4 Community Impact Monitoring 231
4.5 Optional Criterion: Exceptional Community Benefits 232
5 BIODIVERSITY **237**
5.1 Without-Project Biodiversity Scenario 237
5.2 Net Positive Biodiversity Impacts 245
5.3 Offsite Biodiversity Impacts 251
5.4 Biodiversity Impact Monitoring 251
5.5 Optional Criterion: Exceptional Biodiversity Benefits 254
REFERENCES **258**
APPENDIX : REGULATIONS RELATED TO WORKING CONDITIONS **265**

LIST OF ACCRONYMS

AMAR	NGO Action Massive Rurale
APZ	Agricultural and Pastoral Zone
CCPF	Provincial Forest Advisory Council
CCRC	Consultation and Conflict Resolution Committee
CSMA-FPIC	Committee for the Supervision and Monitoring of the Agreement
DRC	Democratic Republic of Congo
ESG	Environmental and Social Governance
ESGMS	Environmental, Social and Governance Management System
ESIA	Environmental and Social Impact Assessment
FPIC	Free, Prior, and Informed Consent
GBV	Gender Based Violence
FGRM	Feedback and Grievance Redress Mechanism
HCV	High Conservation Values
IUCN	International Union for Conservation of Nature
JRC	Joint Research Centre
LB	Leakage Belt
LDC	Local Development Committees
LDF	Local Development Fund
MEDD	Ministry of Environment and Sustainable Development
MRV	Monitoring, Reporting, Verification
NRMP	Natural Resources Management Plan
NTFP	Non-Timber Forest Products
ONFi	ONF international
PA	Project Area
PDD	Project Design Document
PES	Payments for Environmental Services
PZ	Project Zone
RAMC	Rural Agricultural Management Councils
RRD	Reference Region for Deforestation
RRL	Reference Region for Location
SBIA	Social and Biodiversity Impact Assessment (Manual)
SDC	Série de Développement Communautaire
sWc	The Shared Wood Company

LIST OF FIGURES

Figure 1 - Topography and hydrology map....23
Figure 2 - Rainfall diagram in Lisala....24
Figure 3 - Forest types in the Project Zone....26
Figure 4 - Location of villages in the Lisala concession in 2025....27
Figure 5 - Social and administrative structure of the Lisala concession....29
Figure 6 - Map of health and education facilities in the Lisala concession....31
Figure 7 - Lisala concession localisation....32
Figure 8 - Lisala REDD+ Project Area....33
Figure 9 - Lisala REDD+ Project Zone....34
Figure 10 - Spatial division of the PZ into 76 NRMPs....39
Figure 11 - Example of the demarcation of APZ and protected areas under the NRMP (2026-2035) for the village of Bokenga....41
Figure 12 - Theory of change for biodiversity....43
Figure 13 - Theory of change for communities....45
Figure 14 - Forest (2024) and deforestation (2014-2024)....53
Figure 15 - Presentation of the Project and discussion with provincial authorities....60
Figure 16 - Information meeting with territorial authorities....61
Figure 17 - Sensibilization meeting on the Project in the villages....61
Figure 18 - Signature of presence list in the village....62
Figure 19 - FGRM poster displayed in every villages....75
Figure 20 - Example of the village of Bokenga, where the sacred Ewowo forest has been identified in the NRMP (HCV 6)....91
Figure 21 - Information and training meeting with AMAR and sWc Kongo before the launch of the mission....93
Figure 22 - Awareness session in a village....93
Figure 23 - Signing of the FPIC at the Groupement level....93
Figure 24 - Forest disturbance drivers....112
Figure 25 - A model of the spatio-temporal cycle of shifting cultivation in DRC....112
Figure 26 - HCV map....225
Figure 27 - Lisala at the interface of two ecoregions....237
Figure 28 - Identification of the main factors and consequences of the baseline scenario....244

LIST OF TABLES

Table 1 - Unique project benefits of the Lisala REDD+ Project 9
Table 2 - Standardized Benefit Metrics 9
Table 3 - Audit History of the Lisala REDD+ Project 15
Table 4 - Sectoral Scope and Project Type 15
Table 5 - Project Proponent 17
Table 6 - Project Owner 18
Table 7 - Project Manager 18
Table 8 - Technical Operator 18
Table 9 - Project start date 20
Table 10 - Benefits Assessment and Project Crediting Period 20
Table 11 - Estimated Reductions 21
Table 13 - Overview of the project activities of the Lisala Project 36
Table 14 - Sustainable development contributions 46
Table 15 - The Project's development schedule 48
Table 16 - The Project's implementation schedule 48
Table 17 - Risks to the Project 49
Table 18 - Communities in the Lisala REDD+ Project 56
Table 19 - Community groups in the Project 56
Table 20 - Authorities interfering with the Project 57
Table 21 - NGOs involved in the Project 58
Table 22 - Risks from the Project and proposed mitigations 63
Table 23 - Stakeholder consultation with provincial authorities 66
Table 24 - Stakeholder consultation with territorial authorities 66
Table 25 - ESIA survey 67
Table 26 - FPIC process 67
Table 27 - Creation or revitalization of LDCs 68
Table 28 - Development of NRMPs 68
Table 29 - Community participation in FPIC meeting and designation of community delegates in villages 71
Table 30 - Community participation in FPIC signing meeting, AMFC and CCRF at the administrative groupement headquarters 71
Table 31 - FGRM 72
Table 32 - Training for employees, service providers and communities 76
Table 33 - Activities, risks and mitigation measures 79
Table 34 - The management experience of the Lisala REDD+ Project team. 81
Table 35 - Commercially Sensitive Information 84
Table 36 - National and Local Laws 85
Table 37 - Activities designed in accordance with Worker's rights 90
Table 38 - Description of the FPIC process 92
Table 39 - Public meetings leading to LDCs creation 94
Table 40 - Benefit Sharing Mechanisms 95
Table 41 - Summary of barrier analysis 109

Table 42 - Key legislative texts in the DRC 115
Table 43 - Comparison of similarities criteria between PA, RRD, and LB 129
Table 44 - Accuracy assessment results of the forest cover benchmark dataset (2020 & 2024) 131
Table 45 - Annual deforestation in the RRD (2015–2024) 132
Table 46 - Modeled annual deforestation in the RRD (2025–2030) 132
Table 47 - Projected annual deforestation in the RRL (2025–2030) 133
Table 48 - Predictor variables used in modeling risk map of deforestation (2025–2030) 134
Table 49 - Annual deforestation allocated by forest type and zone (PA dense/swamp, LB dense/swamp), 2025–2030 136
Table 50 - Project stratification by forest type (dense vs. Swamp).....136
Table 51 - Sampling parameters used for AGB estimation 139
Table 52 - Summary statistics for above-ground biomass in dense forest 139
Table 53 - Summary statistics for above-ground biomass in swamp forest 140
Table 54 - Summary statistics for below-ground biomass (BGB) for dense forest 141
Table 55 - Summary statistics for below-ground biomass (BGB) for swamp forest.....142
Table 56 - Summary statistics for dead standing wood (BSDW) in dense forest 144
Table 57 - Summary statistics for dead standing wood (BSDW) in swamp forest.....145
Table 58 - Summary statistics for dead lying wood (DLW) in dense forest 146
Table 59 - Summary statistics for dead lying wood (DLW) in swamp forest.....147
Table 60 - Non CO2 GHG emissions due to biomass burning in baseline scenario 151
Table 61 - Summary of net GHG emissions reduction (ex-ante) in first baseline validity period (2025-2030) 152
Table 62 - Deforested area in the LB in baseline scenario 154
Table 63 - ex-ante estimates of emissions from deforestation in the LB in the baseline scenario 155
Table 64 - Ex-ante estimates of leakage emissions due to activity shifting from deforestation in LB in the project scenario.....156
Table 65 - Ex-ante estimates of emissions from deforestation in LB in the project scenario....156
Table 66 - Ex-ante estimates of leakage emissions from deforestation outside the LB in project scenario 158
Table 67 - total ex-ante estimates of leakage emissions in peatland inside and outside the LB in the project scenario.....160
Table 68 - total ex-ante estimates of leakage emissions from activity shifting inside and outside LB in the project scenario.....161
Table 69 - Ex-ante estimates of buffer amount contribution 165
Table 70 - Summary of regression and uncertainty in baseline rate 166
Table 71 - Carbon pool uncertainties (baseline scenario).....167
Table 72 - Baseline emissions by pool from unplanned deforestation used to estimate uncertainty (first crediting period) 168
Table 73 - Summary of baseline uncertainty estimates 169
Table 74 - Summary of total uncertainty.....170
Table 75 - Summary of uncertainty and indicative adjustment.....171

Table 76 - Summary of monitoring data, parameters, and data collection frequency for project implementation....208
Table 77 - Summary of monitoring data, parameters, and data collection frequency for actual carbon stock changes....210
Table 78 - summary of monitoring data, parameters, and data collection frequency for leakage carbon stock changes....212
Table 79 - Summary of monitoring data, parameters, and data collection frequency for ex-post estimations....213
Table 80 - HCV 4 - Areas that provide critical ecosystem services....223
Table 81 - HCV 5 - Areas fundamental for community livelihoods....224
Table 83 - Expected impacts on farmers and natural resource-based livelihoods....226
Table 84 - Expected Impacts on women....227
Table 85 - Expected Impacts on youth (15-24)....227
Table 86 - Community monitoring plan....231
Table 87 - Project's net benefits for Women....233
Table 88 - Project's net benefits for Youth....234
Table 89 - LDCs consist of three governing bodies....235
Table 90 - Wildlife observed in the *Lisala* concession during the 2005 Forest Management Plan inventories....238
Table 91 - UICN Red List classification of threatened Species....238
Table 92 - List of vulnerable and endangered flora species identified during the *2014* Forest Management Plan inventories....239
Table 93 - UICN Red List classification of threatened Species....239
Table 94 - HCV 1 : Threatened fauna species....240
Table 95 - HCV 1 : Threatened Flora Species....241
Table 96 - HCV 2: Landscape-level ecosystems, ecosystem mosaics and intact forest landscapes....242
Table 97 - HCV 3 : Rare, threatened ecosystems....242
Table 98 - Expected changes in biodiversity....245
Table 99 - Species introduced during the Project....248
Table 100 - Poject's biodiversity monitoring plan....251
Table 101 - Kilometric abundance indices for key wildlife species recorded in the PA....255
Table 102 - Trigger species population trends....255

1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Table 1 - Unique project benefits of the Lisala REDD+ Project

Outcome or impact estimated by the end of project lifetime	Section reference
1) Improved local governance with strong community involvement through the establishment of 76 Local Development Committees ("LDC") at the villages level, in charge of designing and implementing Natural Resources Management Plan ("NRMP") activities, supported by the Project	2.3.13
2) Adoption of sustainable and climate-resilient agricultural practices that increase farmers' incomes, reduce pressure on forests, and support the development of local value chains, through the creation of NRMPs	4.2.3
3) Long-term protection of important swath of primary forests that provide habitat for biodiversity of regional and global importance within the Congo Basin	5.6.1
4) Increased resilience of local communities to climate change through the protection of key forest ecosystem services such as soil fertility, water regulation, and climate regulation.	4.3.1 , 4.2.3
5) Fair and transparent sharing of project benefits through community development funds that finance locally identified priorities such as education and health basic infrastructure.	2.5.8

1.2 Standardized Benefit Metrics

Table 2 - Standardized Benefit Metrics

Category	Metric	Estimated by the end of project lifetime	Section reference
GHG emission reductions	*Net estimated removals in the project area, measured against the without-project scenario*	Not applicable	

	Net estimated reductions in the project area, measured against the without-project scenario	**22 302 050 tCO2e** by 2054	2.1.13
Forest[1] cover	*For REDD[2] projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario*	**38 475** ha by 2054	3.2.1
	For ARR[3] projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable	
Improved land management	*Number of hectares of existing production forest land in which IFM[4] practices are expected to occur as a result of project activities, measured against the without-project scenario*	Not applicable	
	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	**44 558 ha** (over the next 10 years)	2.1.17
Training	*Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities*	**7 460** community members (over the next 5 years)	2.3.17

[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)

	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	**2 230** women (over the next 5 years)	2.3.17
Employment	*Total number of people expected to be employed in project activities[5], expressed as number of full-time employees[6]*	**2 700** farmers (over the next 5 years)	4.2.1
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	**810** women farmers (over the next 5 years)	4.2.1
Livelihoods	*Total number of people expected to have improved livelihoods[7] or income generated as a result of project activities*	**14 850** community members (over the next 5 years)	4.2.3
	Number of women expected to have improved livelihoods or income generated as a result of project activities	**7 425** women (over the next 5 years)	4.2.3
Health	*Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario*	**30 800** community members (over the next 5 years)	4.2.3
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	**15 400** women (within the next 5 years)	4.2.3

[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 the 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.

Education	*Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario*	**19 600** children (within the next 5 years)	4.2.3
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	**9 800** girls (within the next 5 years)	4.2.3
Water	*Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario*	Data not available	
	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Data not available	
Well-being	*Total number of community members whose well-being[8] is expected to improve as a result of project activities*	**17 400** (over the next 5 years)	4.2.3
	Number of women whose well-being is expected to improve as a result of project activities	**8 700** (over the next 5 years)	4.2.3
Biodiversity conservati	*Expected change in the number of hectares managed significantly better by the project*	**192 751** ha	2.1.1

[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, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food security, conservation of access to areas of cultural significance, etc.

	for biodiversity conservation[9], measured against the without-project scenario		
	Expected 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	2 endangered animal species 9 critically endangered or endangered tree species	5.1.1

[9] Managed for 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, e.g. enhancing the status of endangered species

[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

2 PROJECT DETAILS

2.1 Project Goals, Design and Long-Term Viability

2.1.1 Summary Description of the Project (VCS, 3.2, 3.6, 3.10, 3.11, 3.13, 3.14; CCB, G1.2)

The Lisala REDD+ Project (hereinafter "the Project") is a REDD+ investment - as defined in the Congolese law [12]- that aims at implementing an integrated and comprehensive approach designed to: (i) reduce carbon emissions by addressing the drivers of deforestation and forest degradation, namely slash-and-burn agriculture and charcoal production and (ii) improve livelihoods of forest-dependent communities within a private conservation concession.

To that end, the Project will replicate approaches successfully piloted and supported in the Maï-Ndombe Province by the Forest Investment Program (FIP), the Forest Carbon Partnership facility (FCPF) and the Central African Forest Initiative (CAFI) with the World Bank as the executing agency.

Project activities will be implemented within and around the conservation concession No. 04/24 (the "Lisala concession" or "the Concession"), located in the Lisala territory of the Mongala province, in the Democratic Republic of Congo (DRC). The Concession covers an area of 182'751 hectares, including forests and rural development areas. The forests in the Concession that were previously intended for logging have been converted to conservation areas. Project activities are implemented in 76 villages (66 villages inside the Concession and 10 villages around), covering a growing population around 102,642 people[13].

The region is experiencing increasing deforestation, largely driven by agricultural activities expanding toward the core of the Concession. To address this trend, the Project adopts a coherent and coordinated territorial approach aligned with the DRC's National REDD+ Strategy. The Project's operational framework includes the following strategic actions :

i) LDCs will be established at the village level to strengthen governance and decision-making at the local scale;
ii) LDCs will lead participatory land-use planning processes, tailored to the region's agricultural context and to the communities' development ambitions;
iii) Farmer training programs will be implemented alongside the dissemination of improved agricultural practices aimed at increasing yields and rural incomes, including payments for environmental services (PES) and the promotion of high-value perennial crops;
iv) In addition to agriculture, targeted investments will support more sustainable fishing and hunting practices;
v) Public infrastructure, including schools and health centers, will be rehabilitated or constructed through a Local Development Fund (LDF);

[12] Plan d'Investissement de la Stratégie Nationale REDD+ de la République du Congo 2018-2025 , https://cafi.org/app/uploads/2025/01/2018-Plan-dInvestissement_REDD_RoC_version-Finale7b-1.pdf
[13] Estimate produced in 2026 by cross-referencing data from the health department, socio-economic surveys used to identify the number of households per village, and satellite analyses of the number of dwellings.

vi) Family planning initiatives will be considered to manage population growth over the medium term;

The Project's objectives are structured around climate, biodiversity, and community impacts.

Regarding climate benefit, the Project aims to achieve significant reductions in greenhouse gas emissions by protecting and sustainably managing forest resources. The VCS-approved VM0007 (v1.8) methodological framework is applied, with expected avoided deforestation of approximately 1283 hectares per year within the Project Area (PA). This is estimated to result in average annual emission reductions of 743,402 tCO_2, totaling 22,3 million tCO_2 over the first 30-year crediting period. This contribution supports the national objective of stabilizing forest cover at 63.5% by 2030. [14]

In terms of biodiversity, the Project seeks to preserve and restore forest ecosystems in a conservation concession located in the Congo Basin, one of the world's most important biodiversity reservoirs. The conversion of former logging areas into permanent conservation zones (please refer to Section 2.2.1.3) represents a key contribution to maintaining ecological integrity, while supporting sustainable community-based forest management.

Concerning community objectives, the Project aims to strengthen the living conditions of local populations, by promoting inclusive community governance of the Concession, improving access to essential services, and supporting more resilient and sustainable livelihood opportunities.

The Project commits to applying the World Bank's Environmental and Social Standards (ESSs) to mitigate environmental and social risks, and generate positive impact through the Project. To this end, the Project follows a set of policies and specific environmental and social guidelines defined by the Project Manager[15].

2.1.2 Audit History (VCS, 4.1)

Table 3 - Audit History of the Lisala REDD+ Project

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	N/A	VCS CCB	N/A	N/A

2.1.3 Sectoral Scope and Project Type (VCS, 3.2)

Table 4 - Sectoral Scope and Project Type

Sectoral scope	14: Agriculture, forestry, and other land use (AFOLU)
AFOLU project category [16]	REDD+ (Reducing Emissions from Deforestation and forest Degradation)

[14] Stratégie cadre nationale REDD+ de la République Démocratique du Congo, 2012
[15] Refer to *SWC Way of Doing Business Framework,* The Shared Wood Company, 2021
[16] See Appendix 1 of the VCS Standard

Project activity type	Avoiding Unplanned Deforestation (AUD)

2.1.4 Project Eligibility (VCS, 3.1, 3.6, 3.8, 3.18, 4.1; CCB Program Rules, 4.2.4, 4.6.4)

The Project is eligible to participate under both the Verified Carbon Standard (VCS) Program and the Climate, Community & Biodiversity (CCB) Standards, as demonstrated below.

Under the VCS Program, the Project complies with all applicable program rules, including legal compliance, the use of eligible and approved methodologies, and adherence to the latest version of the standard (currently v4.7). The Project respects national laws, regulations, and customary rights in accordance with Congolese legislation, as further detailed in Section 2.5.1.

The Project applies the VCS-approved VM0007 REDD+ Methodology Framework (REDD-MF), version 1.8, which is currently eligible and active under the VCS Program. All relevant modules and tools required by this methodology, including the AFOLU Non-Permanence Risk Tool and modules for baseline determination and leakage accounting, will be implemented. The Project uses standardized approaches for demonstrating additionality and establishing baselines, and applies all default parameters and factors in full compliance with the VCS Methodology Requirements.

The Project falls under VCS Scope 14 (Agriculture, Forestry and Other Land Use) and is classified as an Avoided Unplanned Deforestation and/or Degradation (AUDD) activity. This classification is justified because deforestation and forest degradation in the PA are driven by diffuse, unsanctioned land-use activities - such as slash-and-burn subsistence farming, small-scale charcoal production, and informal timber extraction - rather than legally authorized or planned conversions. These activities create scattered pressures across the landscape, matching the VCS definition of unplanned deforestation and degradation. The Project addresses these drivers through improved governance, land-use planning, and sustainable livelihood alternatives, fully aligning with VCS criteria for AUDD activities.

The Project is implemented within and around the Lisala concession, which covers 182,751 hectares, of which 148 183 hectares are forested lands[17] designated as the PA. The Project is designed as a single-location AFOLU project and does not include grouped project elements or the addition of new activity instances after validation.

Since the Project start date is 1 March 2025, the Project was listed on the Verra Registry in November 2025, and validation will occur within the five-year timeframe required for large-scale AFOLU projects under the VCS Program. Prior to validation, the Project will complete a 30-day public comment period, during which members of the public are invited to submit comments to the VCS regarding whether the Project meets the VCS Program and CCB Standards rules and requirements. The validation report and validation statement will be submitted to VCS within one year of the initiation of the public comment period, in compliance with CCB Rule 4.2.4.

The Project is also eligible under the Climate, Community & Biodiversity (CCB) Standards. It delivers significant benefits for climate, communities, and biodiversity by avoiding deforestation, improving land-use governance, supporting sustainable livelihood activities, and conserving tropical forest ecosystems

[17] The Project Area (or Forest Area, 148 183 ha) was updated based on 2025 forest cover data derived from the analysis presented in Section 3.2.1.3

within the Congo Basin. The Project aims to preserve 148 183 hectares of tropical forest, recognized as one of the world's most critical biodiversity hotspots.

Stakeholder engagement was conducted through inclusive, culturally appropriate consultations, ensuring that Free, Prior, and Informed Consent (FPIC) is obtained from all relevant communities. A Feedback and Grievance Redress Mechanism (FGRM) is in place to manage potential conflicts and ensure ongoing dialogue with stakeholders.

Legal rights over the Concession are secured through a formal conservation concession contract (CCFC No.04/24, the "Concession Contract") signed on 5 December 2024 between Taranis Congo (formerly Equaforest SARLU) and the Government of the DRC. Taranis Operations Limited, as the Project Proponent, is undergoing the national REDD+ investment homologation process required under Ministerial Order No. 047/CAB/MIN/EDD/AAN/MMUOS/2018, which, once completed, will secure exclusive rights over the Emission Reductions generated by the Project.

The Project does not conflict with any existing VCS or other greenhouse gas program rules. All validation and verification activities will be conducted in accordance with ISO 14064-3 and ISO 17029, ensuring compliance with VCS requirements for third-party validation and verification.

2.1.5 Transfer Project Eligibility (VCS, 3.23, Appendix 2)

This project is not a Component Project Activity (CPA) and is not a part of any other GHG program.

2.1.6 Project Design (VCS, 3.6)

Indicate if the project has been designed as:

☒ Single location or installation

☐ Multiple locations or project activity instances (but not a grouped project)

☐ Grouped project

2.1.6.1 Eligibility Criteria for Grouped Projects (VCS, 3.6; CCB, G1.14)

N/A

2.1.7 Project Proponent (VCS, 3.7; CCB, G1.1)

Table 5 - Project Proponent

Organization name	Taranis Operations Limited
Contact person	Bruno Visconti
Title	NBS Managing Director

Address	8 Hanover Square, London, United Kingdom, W1S 1HQ.
Telephone	+44 20 7355 9100
Email	nbs@taranis.eu

2.1.8 Other Entities Involved in the Project

Table 6 - Project Owner

Organization name	Taranis Congo
Role in the project	Project Owner - Congolese subsidiary of Taranis Operations Limited, holder of the Lisala concession.
Contact person	Yvonne MBala
Title	Gérant
Address	11eme étage, Immeuble BCDC, Boulevard du 30 Juin, B.P. 15 596 C/Gombe, V/Kinshasa, P/Kinshasa, République Démocratique du Congo
Telephone	+243 81 855 1021
Email	nbs@taranis.eu

Table 7 - Project Manager

Organization name	The Shared Wood Company SAS (sWc)
Role in the project	Project Management on behalf of Taranis Operations Limited
Contact person	Laurent Valiergue
Title	President
Address	16 rue de l'Arcade, 75008 Paris France
Telephone	+33 1 40 07 03 66
Email	info@thesharedwood.com

Table 8 - Technical Operator

Organization name	The Shared Wood Company Kongo (sWc Kongo)
Role in the project	Implementing Partner - Daily management of the operations in the field
Contact person	Paul Brueder
Title	Investment Manager
Address	48 avenue Roi Baudoin, Résidence Imani 5eme étage, Appartement 5A, Quartier Lemera, C/Gombe, V/Kinshasa, P/Kinshasa, République Démocratique du Congo
Telephone	+33 1 40 07 03 66
Email	info@thesharedwood.com

2.1.9 Project Ownership (VCS, 3.2, 3.7, 3.10; CCB, G5.8)

Land Ownership

Legal rights over the Concession are secured through a formal Concession Contract signed on 5 December 2024 between Taranis Congo (formerly Equaforest SARLU) and the Ministry of Environment and Sustainable Development of DRC (MEDD), for a duration of 25 years[18]. The Concession Contract is renewable at the request of the Concessionaire, subject to compliance with applicable legal renewal conditions.

Taranis Congo therefore complies with the ownership requirements of the VCS Standard (v4.7), as it fulfils criteria 1 of Section 3.7.1 ("*Project ownership arising or granted under statute, regulation, or decree by a competent authority*").

Project Ownership

Besides, the Project is financed and implemented by Taranis Operations Limited, acting as the Project Proponent. As the unique shareholder of Taranis Congo, Taranis Operations Limited has an agreement with the holder of the contractual right in the land which vests Project ownership in the Project proponent.

Taranis Operations Limited therefore complies with the ownership requirements, as it fulfils criteria 6 of Section 3.7.1 ("*An enforceable and irrevocable agreement with the holder of the statutory, property or contractual right in the land, vegetation or conservational or management process that generates GHG emission reductions or carbon dioxide removals which vests project ownership in the project proponent.")*

Eventually, in accordance with Article 3 of Ministerial Decree No. 047/CAB/MIN/EDD/AAN/MMUOS/2018 (May 9, 2018), which governs the approval of REDD+

[18] According to Law No. 011/2002, of 29 August 2002, that sets forth the rules applicable to the conservation, exploitation and development of forestry resources in all national territory (Forestry Code)

investments in the DRC, the State retains exclusive ownership of Congolese Emission Reduction Units (ERUs), which may be transferred to the REDD+ investment holder only upon completion of the legal homologation process prescribed by the decree.

Hence, a legally binding agreement (the "Framework Agreement") has been signed (December 30, 2024) between Taranis Congo, acting on behalf of Taranis Operations Limited, and the Government of the DRC, represented by the MEDD, which recognizes Taranis Operations Limited's exclusive rights to the carbon credits generated by the Project, subject to the completion of the legal homologation process described in the Ministerial Decree No. 047/CAB/MIN/EDD/AAN/MMUOS/2018 (May 9, 2018).

2.1.10 Project Start Date (VCS, 3.8)

Table 9 - Project start date

Project start date	01/03/2025
Justification	The Project start date is defined as the date on which activities that contribute to the generation of emission reductions are implemented. For the Lisala REDD+ Project, this includes: - the signature of contract of services between Taranis Operations Limited and sWc and Taranis Congo and sWc Kongo for the overall management of Project activities; - the launch of local public consultation and awareness activities, including FPIC with local communities; - the recruitment and deployment of project teams responsible for implementing forest management, protection, and conservation activities within the PA. In accordance with VCS Program Rules, the Project initiated the pipeline listing process within three years of the project start date and was listed on the VCS registry in November 2025, and will complete validation within five years of the project start date.

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

Table 10 - Benefits Assessment and Project Crediting Period

Crediting period	The Project crediting period is 90 years, in line with VCS Standard v4.7 for AFOLU projects. It consists of an initial 30-year period, which is renewable up to three times, allowing the total Project duration of 90 years.

Start date of first or fixed crediting period	The Project has a first crediting period of 30 years [19] from March 3, 2025, to February 28, 2055.
CCB benefits assessment period	The CCB benefits assessment period is aligned with the Project crediting period (90 years). Climate, biodiversity, and community outcomes will be monitored continuously throughout the crediting period, with annual reporting of key indicators and adaptive management as needed. This alignment ensures that the assessment of non-carbon benefits is consistent with the duration of emission reductions claims.

2.1.12 Differences in Assessment/Project Crediting Periods (CCB, G1.9)

The assessment periods for the GHG emissions accounting and the CCB components are the same.

2.1.13 Project Scale and Estimated Reductions or Removals (VCS, 3.10)

☐ < 300,000 tCO_2e/year (project)

☒ ≥ 300,000 tCO_2e/year (large project)

Table 11 - Estimated Reductions

Calendar year of crediting period	Estimated reductions or removals (tCO_2e)
01-March-2025 to 31-December-2025	747 805
01-january-2026 to 31-December-2026	718 363
01-january-2027 to 31-December-2027	775 800
01-january-2028 to 31-December-2028	724 947
01-january-2029 to 31-December-2029	727 203
01-january-2030 to 31-December-2030	689 419
01-january-2031 to 31-December-2031	709 449
01-january-2032 to 31-December-2032	729 782
01-january-2033 to 31-December-2033	750 115
01-january-2034 to 31-December-2034	770 448
01-january-2035 to 31-December-2035	763 158
01-january-2036 to 31-December-2036	758 119
01-january-2037 to 31-December-2037	751 780
01-january-2038 to 31-December-2038	748 513
01-january-2039 to 31-December-2039	746 086
01-january-2040 to 31-December-2040	746 071
01-january-2041 to 31-December-2041	746 071

[19] The Concession Contract covers a period of 25 years (Section 2.1.9) but its renewal is guaranteed (subject to compliance with the terms of the agreement). The 30-year crediting period is therefore guaranteed.

01-january-2042 to 31-December-2042	746 071
01-january-2043 to 31-December-2043	746 071
01-january-2044 to 31-December-2044	746 071
01-january-2045 to 31-December-2045	746 071
01-january-2046 to 31-December-2046	746 071
01-january-2047 to 31-December-2047	746 071
01-january-2048 to 31-December-2048	746 071
01-january-2049 to 31-December-2049	746 071
01-january-2050 to 31-December-2050	746 071
01-january-2051 to 31-December-2051	746 071
01-january-2052 to 31-December-2052	746 071
01-january-2053 to 31-December-2053	746 071
01-january-2054 to 31-December-2054	746 071
Total estimated ERRs during the first or fixed crediting period	22 302 050
Total number of years	30
Average annual ERRs	743 402

2.1.14 Physical Parameters (CCB, G1.3)

The data relating to the physical parameters of the Concession are derived from analyses conducted by Forabola (the former forestry company who owned the logging concession No. 036/11), and are described in the Forabola Forest Management Plan[20] designed in 2021.

2.1.14.1 Topography and Geological Features

The Lisala concession is located in the northern part of the DRC, on the right bank of the Congo River. It extends between latitudes 2°10’ and 2°40’ North and longitudes 20°30’ and 21°20’ East.

The landscape is generally flat, with slightly more pronounced relief in the southern part of the Concession. The terrain remains overall low-gradient and is strongly influenced by an extensive hydrographic network. In contrast, the northern and central parts are characterized by large swampy areas associated with major rivers.

From a geological perspective, the Concession is mainly composed of unconsolidated sedimentary deposits, including alluvial, colluvial, and eluvial formations dating from the Pliocene and Pleistocene periods. This geological context is consistent with the broader sedimentary environment of the Central Congo Basin.

[20] Plan d’Aménagement Forestier de la concession No.036-11/Lisala, 2021
.

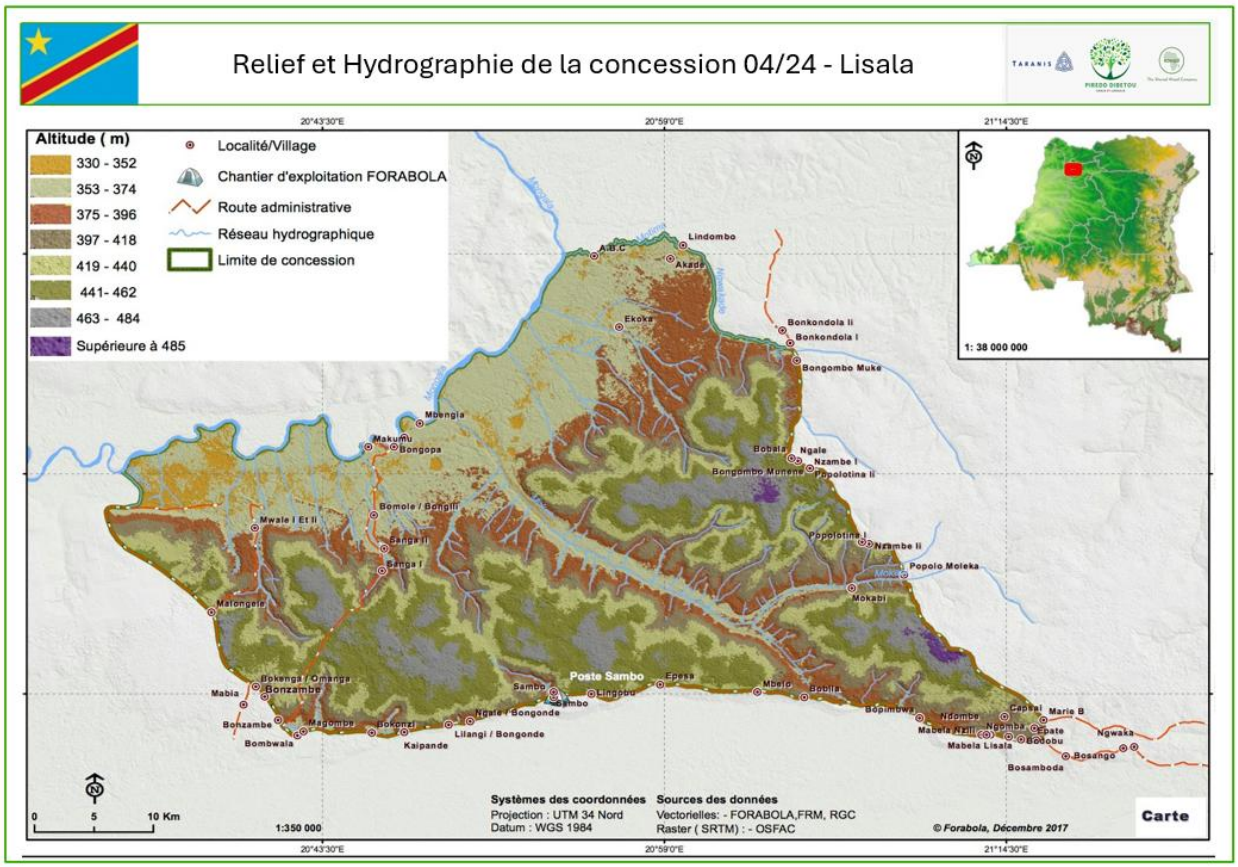


Figure 1 - Topography and hydrology map

Source: Forabola Forest Management Plan, 2021

2.1.14.2 Hydrology

The Concession is crossed by a dense network of rivers and streams that structure the landscape and determine drainage patterns and accessibility.

- The Mongala River forms the northern boundary of the Concession and represents the main hydrological feature.
- The Mokabi River flows through the central part of the Concession along a northwest–southeast axis before joining the Mongala River near the locality of Molanda.
- Most secondary watercourses are connected to the Mongala River, resulting in a dominant drainage direction from southeast to northwest across the Concession.

Hydrological conditions are particularly humid in the northern and central sections due to the presence of the Mongala and Mokabi rivers, which are bordered by extensive swamp forests. These areas are characterized by large expanses of hydromorphic environments, including seasonally or permanently flooded forests.

2.1.14.3 Soils

The Concession lies within a transitional pedological zone and includes two main soil categories:

- Recent alluvial soils, largely hydromorphic, which dominate in low-lying and flood-prone areas, particularly in the northern and central parts of the Concession.
- Ferralsols, mainly found on plateau areas, generally better drained and less influenced by flooding.

These soil characteristics reflect the interaction between the flat relief, the dense hydrographic network, and the alternation between upland and swampy environments.

2.1.14.4 Climate

As there is no meteorological data available for the Concession, the reference used is the data[21] collected in Lisala city, located 75 km east of the Concession.

The relationship between precipitation distribution and temperatures recorded in the area of influence is illustrated by the ombrothermic diagram below, which was developed based on these two climate parameters.

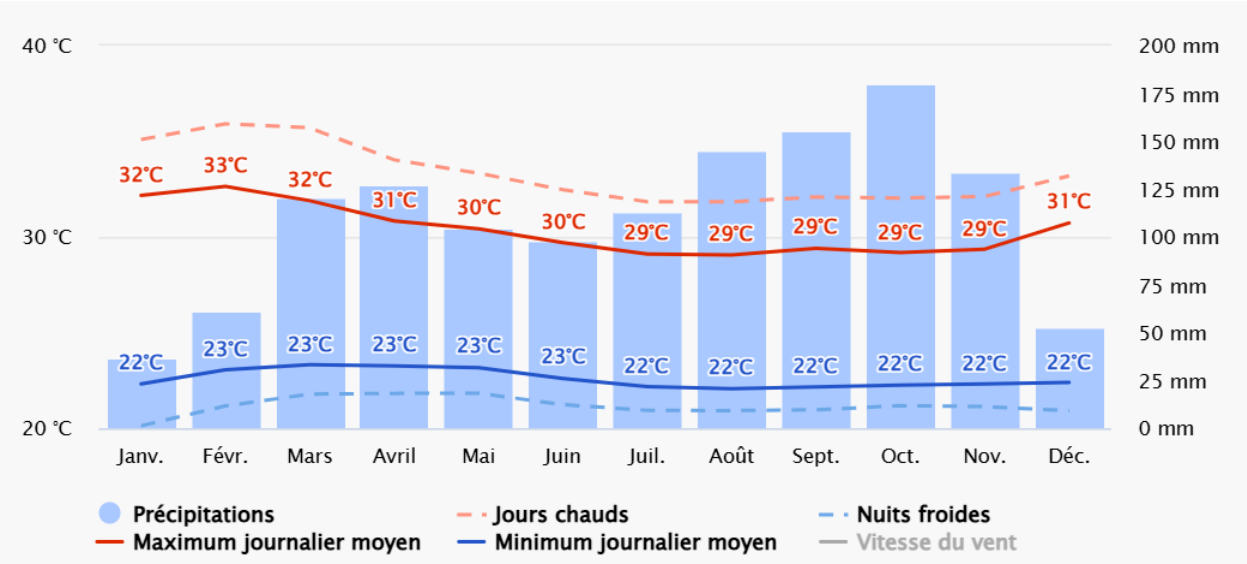


Figure 2 - Rainfall diagram in Lisala

Source: "*Simulation de données climatiques et météorologiques historiques pour Lisala", meteoblue.*

[21] « Simulation de données climatiques et météorologiques historiques pour Lisala», meteo blue.

The area experiences a hot and humid equatorial climate with limited annual temperature variation. The region has an equatorial climate, characterized by little seasonal variation and an average annual temperature of 25°C. Temperatures generally range from 22°C to 33°C.

This climate features a dry season stretching from December to February. A very slight drop in rainfall is also observed in June. The total average annual rainfall is high, in the region of 1,600 to 1,700 mm/year.

2.1.14.5 Type of vegetation

The Lisala concession is characterized by a mosaic of vegetation types dominated by forest ecosystems, whose distribution is closely related to topography, hydrology, and past anthropogenic disturbances. Land cover mapping of the Concession was carried out using GIS with data from 2021.

Two main forest ecosystems represent most of the Concession:

- **Dense forests** are the dominant vegetation type, covering approximately **139 415 ha (94.1%).** They include several subtypes forming a continuum:

  - **Semi-deciduous dense humid forests**, characterized by a mixture of deciduous species and evergreen elements and a high floristic heterogeneity;
  - **Dense humid forests,** representing transitional formations between semi-deciduous and evergreen forests, with an increased proportion of evergreen species;
  - **Dense humid evergreen forests,** composed of species that do not exhibit marked seasonal leaf loss, often with gregarious behavior;
  - **Dense humid evergreen forests** dominated by Gilbertiodendron dewevrei, where this species forms nearly monodominant stands.

These dense forest formations display variable canopy openness, influencing understorey density, liana abundance, and regeneration dynamics. Their distribution is partly controlled by proximity to the hydrographic network and local edaphic conditions.

- **Swamp forests** cover approximately **8 768 ha (5,9%).** This category includes both seasonally flooded forests and permanently inundated forests, which are difficult to distinguish at the mapping scale and are therefore grouped together. These formations occur along watercourses and in poorly drained lowlands. They are characterized by hydromorphic conditions, relatively open canopies, smaller trees, and understoreys often dominated by lianas. Species adapted to waterlogged environments are common, and some exhibit gregarious behavior.

It should be noted that the southern part of the Concession has been previously logged, resulting in anthropogenic disturbances that have locally modified species composition and diameter class distribution. These disturbances have generally favored the development of secondary forests and contributed to the transition between semi-deciduous and evergreen dense forest types.

In addition to forest ecosystems, the Concession includes limited non-forest land covers, notably **agricultural complexes,** consisting of a mosaic of cultivated areas, fallows, slash-and-burn plots, interspersed forest patches, and village-associated infrastructure. These areas reflect both long-standing and more recent clearing activities.

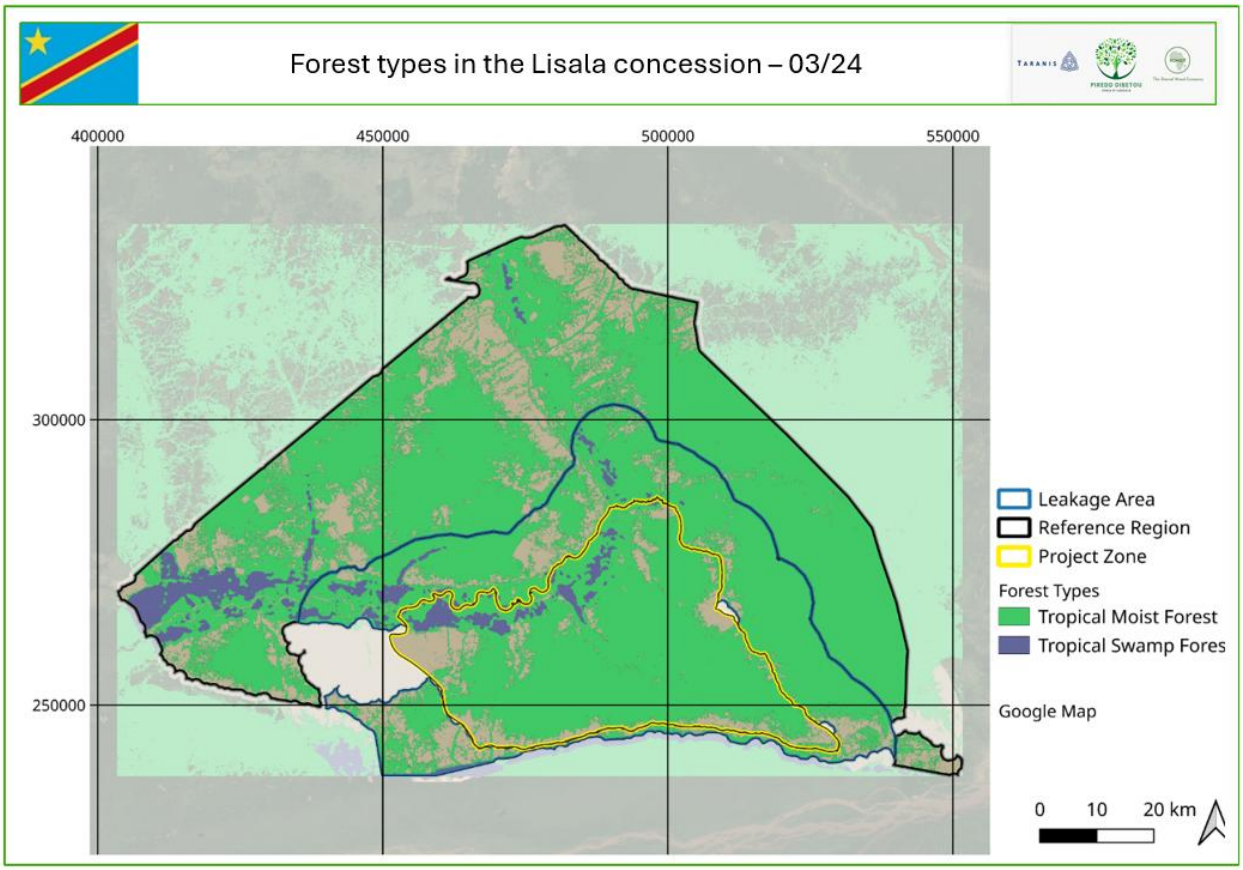


Figure 3 - Forest types in the Project Zone

Source: sWc Kongo, 2026

2.1.14.6 Conservation Status and Land Designation

The Lisala concession is held under a forest conservation concession contract, with land use oriented toward long-term ecosystem conservation.

2.1.15 Social Parameters (VCS, 3.18; CCB, G1.3)

2.1.15.1 Population Distribution and Main Settlements

Public consultations conducted by the local NGO AMAR[22], to obtain the FPIC and complete the Environmental and Social Impact Assessment (ESIA), resulted in the identification of 66 villages inside the Lisala concession, spread into 5 Groupements (Bogombo, Bokutu, Bongopa, Bwela, Ndeke). [23]

[22] The mission report is available to auditors.

[23] The boundaries of the communities represented within the Lisala concession, as shown in Figure 4, are based on the administrative status of the villages as recorded during Sodefor's fieldwork and on the Atlas de l'organisation administrative de la République Démocratique du Congo, produced in 2005 by the Centre for Pastoral Studies and Social Action (CEPAS) with the support of the Ministry of the Interior, Decentralisation and Security and the National Institute of Statistics.

Furthermore, 10 other villages located along the boundaries of the Concession and belonging to one of the five Groupement have expressed their willingness to participate in the project. Therefore, a total of 76 villages in and around Lisala concession are participating in the project (66 within the Concession area and 10 in the surrounding area), and the total population of the villages involved in the project is estimated to 102 700 inhabitants.

Within the concession area, the population is not distributed evenly. It is concentrated mainly along sections of the administrative road network, including the Mbokutu – Bonguma and Bonguma – Bokundola routes.

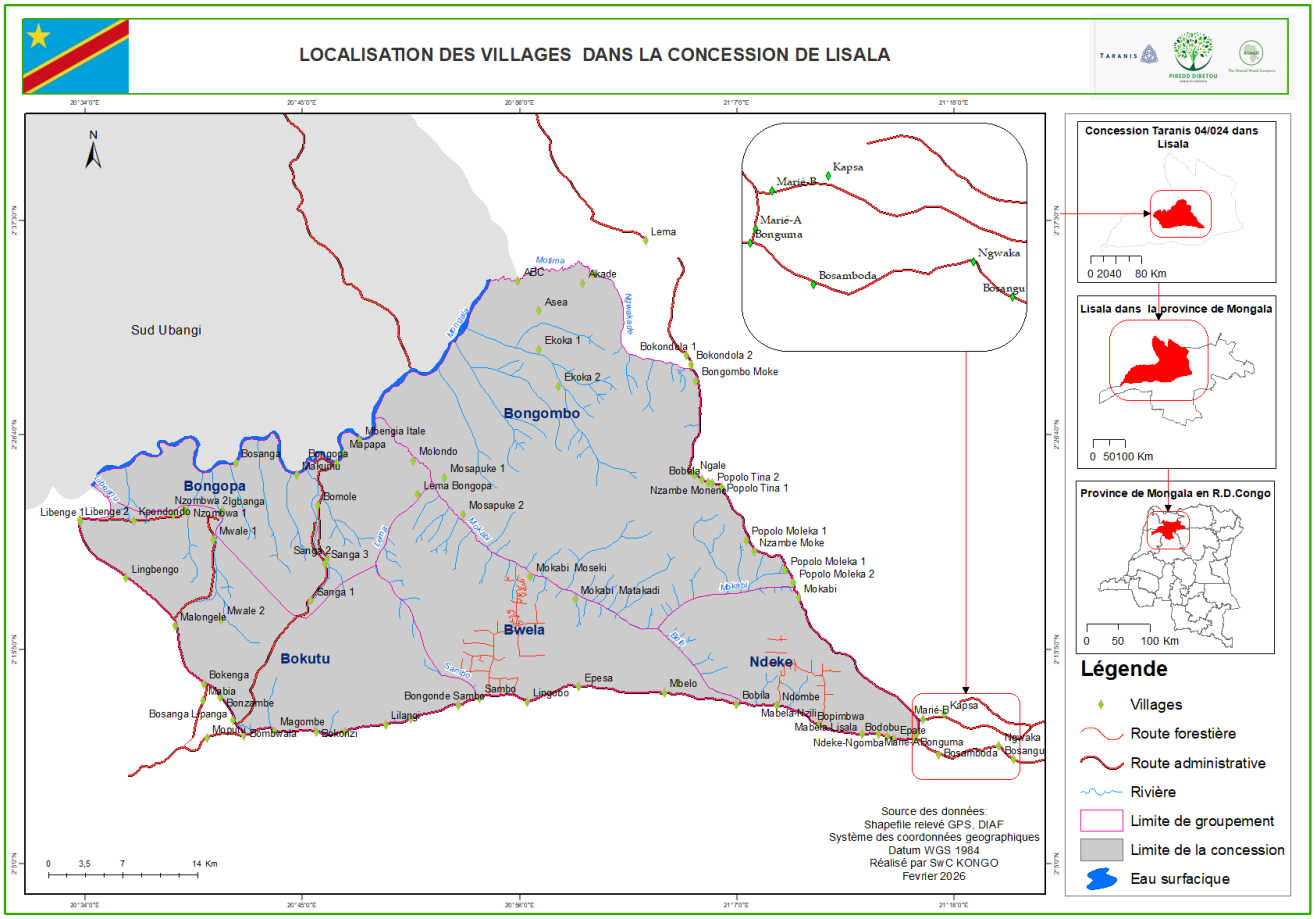


Figure 4 - Location of villages in the Lisala concession in 2025

Source: sWc Kongo, 2026

2.1.15.2 Historic conditions

The forest area of the Lisala concession, like the vast majority of forest habitats in the Congo Basin, is of natural origin. The majority of the Lisala concession area has never been subject to industrial logging. Industrial logging operations on the Concession began in earnest in 2008 with the arrival of the company

SODEFOR[24]. The logging areas were situated along the road marking the upper boundary of the Concession. Small-scale and informal logging, meanwhile, is widespread in the Lisala region, particularly in the form of log sawing [25].

2.1.15.3 Land use and economic activities

The majority of the population encountered in the Lisala concession lives in rural areas and is affected by a lack of job-creating activities. Overall, the standard of living is very low, due to limited cash flow and difficulties in accessing basic necessities (refer to 4.1.1).

The main livelihood activities practiced by local communities include mainly agriculture, but also fishing, hunting, gathering and small-scale livestock breeding[26].

- **Agriculture** is the dominant activity, practiced by approximately 80%-90% of households[27], mainly on non-flooded lands using slash-and-burn systems with fallow periods of 4 to 7 years. Permanently or seasonally flooded lands during the rainy season are not used for agriculture. The main crops include cassava, maize, rice and groundnuts, with cassava being the primary staple and cash crop.
- **Fishing and hunting** are secondary activities for the local population, and can sometimes play a crucial role in the economy of certain villages.

  Fishing is a key source of food and income, particularly for communities living near rivers and wetlands. However, fishers report a decline in fish stocks, partly due to destructive fishing practices and the enclosure of spawning areas during the early dry season. This decline has led some households to increase their reliance on agriculture.
- **Livestock farming, gathering and craftwork** are secondary activities for the local people.

2.1.15.4 Customary land tenure and governance

Administratively, the Lisala concession is located in:

- Mongala Province;
- the Lisala Territory;
- the Ngombe Doko, Ngombe Mombangi and Likimi sectors;
- the Bongombo, Bwela, Ndeke, Bongopa and Bokutu Groupement

[24]Logging company prior to the concession being transferred to Forabola
[25] Data from Plan d'aménagement concession No.036/11-Lisala, Octobre 2021
[26] Field surveys as part of data collection for the ESIA, 2025
[27] Field surveys as part of data collection for the ESIA, 2025

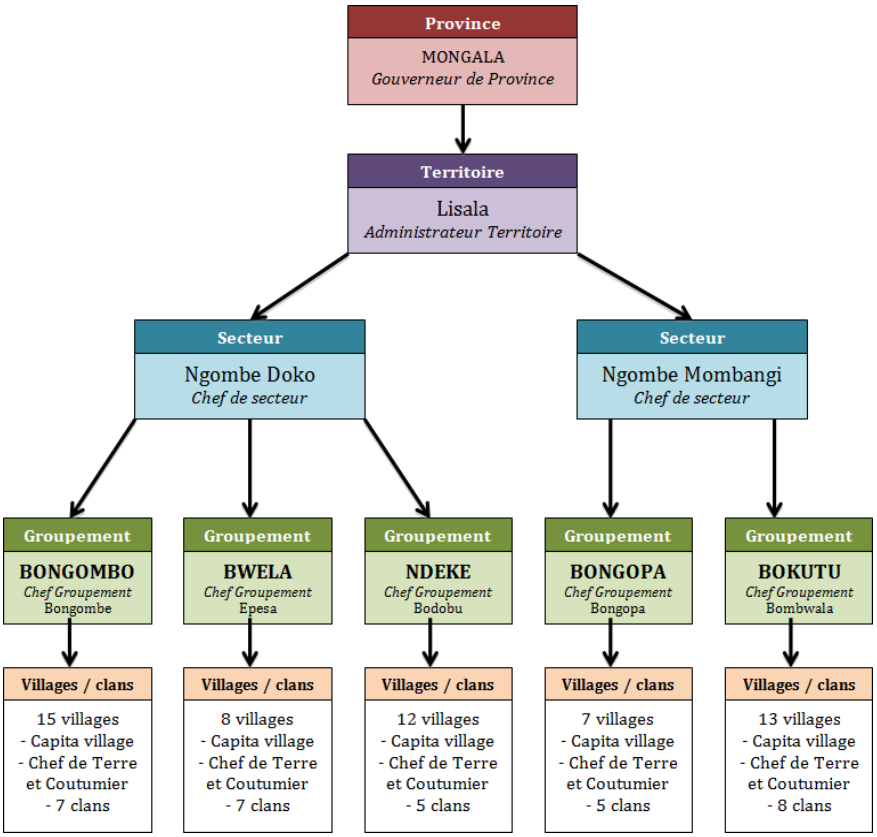


Figure 5 - Social and administrative structure of the Lisala concession

Source: Forest Management Plan for the Lisala concession, 2021

Land legally belongs to the State, but access to land and natural resources is governed locally through customary systems[28]. Customary authority is organized around Groupement, Land and Clan Chiefs, who play a central role in regulating access to land, forests and rivers, resolving land disputes, and allocating use rights to community members and non-members[29].

While access to land in rural areas is generally possible with the approval of customary authorities, land tenure remains largely informal, and land-related conflicts may arise due to unclear boundaries, inheritance issues, or competing land uses.

2.1.15.5 Socio-cultural Characteristics

Social and cultural dynamics are shaped by ethnicity, language, gender roles, and economic stratification.

[28] Refer to 2022 Due Diligence report
[29] Robert E. Moïse, Réussir la foresterie communautaire en RDC : perspectives anthropologiques sur la gestion communautaire des forêts, 2019, Rainforest foundation UK

- Language

The communities in the Concession are mainly composed of tribes of the Bangala group[30] (Mongo tribes mentioned in the Bwela groupement). Each tribe has its own dialect (Bwela, Kingombe, Kindeke, Kibwela, Ngombe, Likutu, Mbunza, Ngwandi…)[31], but the common local language is Lingala, which is spoken in all the villages alongside the local dialects. There is no Indigenous Peoples identified in the Concession.

- Gender Roles

Women play a central role in household organization, subsistence agriculture, and the processing and trade of agricultural and NTFP, yet they remain largely underrepresented in leadership and decision-making structures[32]. They face significant barriers to economic empowerment, including lack of access to land ownership, limited participation in local governance bodies, and high exposure to GBV and discrimination. Social norms assign women primary responsibility for childcare, farming activities, and household management, which often prevents them from participating in village or inter-village meetings where key decisions and committee memberships are determined.

- Infrastructures (water, roads…)

Within the concession area, only two developed water supply facilities were identified during the socio-economic surveys carried out as part of the 2021 Forest Management Plan:

- in the village of Ngombe (Ndeke), with a borehole drilled by UNICEF in 2016;
- in the village of Ngwaka (Bwela), with a spring developed by CARITAS as part of the 'Sanitary Villages' project in 2016.

In all the other villages surveyed, people obtain their drinking water from either springs or rivers with running water. The distance to the springs varies but is usually no more than 2 km. Depending on the situation, the communities report a walking time of between 5 minutes and 1 hour.

Roads are in in poor conditions, mostly accessible on foot or by motorbikes and bikes. Electricity supply is largely absent, except for small-scale private generators or solar panels.

- Education and Health

During the NRMPs [33] surveys, 63 primary schools and 40 secondary schools were identified across the 76 villages in the Project Zone (PZ).[34] However, these establishments are in a very poor state of repair. Furthermore, only 5 nursery schools, 8 secondary schools and 1 university were identified.

The education system faces challenges. Teachers are frequently paid directly by families, and in some cases unqualified villagers assume teaching roles. School enrolment remains low due to financial constraints and long distances to schools, with boys' education often prioritized.

[30] Due Diligence report, 2022
[31] Dialects recorded as part of the NRMPs collection
[32] Diagnostic sur l'autonomisation économique des femmes en RDC : Obstacles et opportunités, World Bank Group, 2021
[33] Data collection within the framework of the NRMPs in 2025
[34] See definition Section 2.1.16

As for the health services within the Concession, there are no hospitals with doctors in the Concession; there are only 13 health posts and 14 health centres[35], which are poorly equipped and lack maternity services. Medical staff are often unpaid or underpaid, pharmacies are scarce, and medicines are largely unaffordable, leading communities to rely on traditional medicine and to travel long distances for treatment.

All in all, the deterioration of the socio-economic fabric over recent decades has led to a decline in living standards for local communities. The socio-economic studies carried out under Forabola[36], as well as the field surveys conducted as part of the ESIA (2025) and the NRMPs (2026) for the Project, reveal that the population suffers from a lack of basic facilities and the dilapidation of existing community infrastructure (roads, schools, health centres, hospitals, etc.).

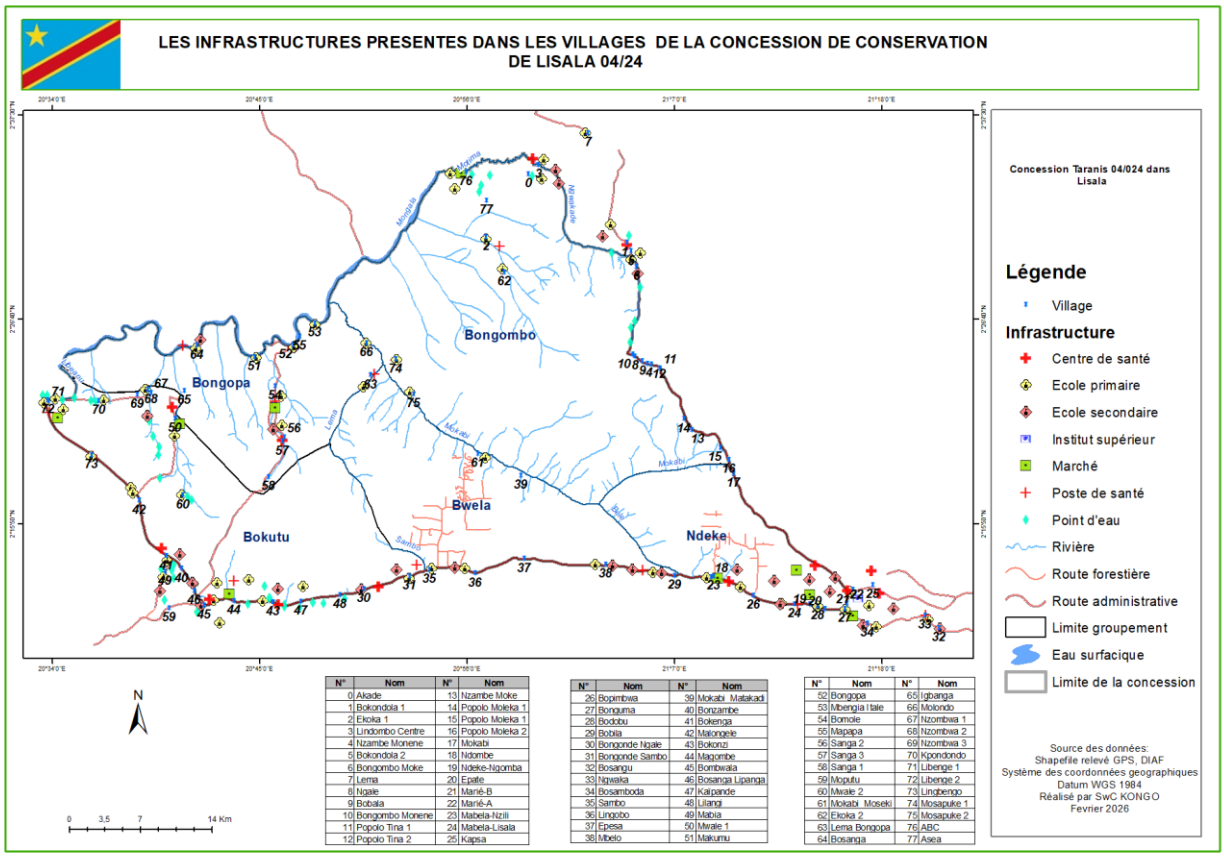


Figure 6 - Health and education facilities in the Lisala concession

2.1.16 Project Zone Map and Project Location (VCS, 3.11, 3.18; CCB, G1.4-7, G1.13, CM1.2, B1.2)

2.1.16.1 Project Location and Geographic Boundaries

[35] Data collection within the framework of the NRMPs in 2025
[36] ESIA Forabola, 2023

The Lisala concession is located in the north of the DRC on the right bank of the Congo River.

The Concession is bounded by the limits described in forestry concession contract 036/11 of 24 October 2011, a map of which is provided below (figure 6).

- to the north: the Mongala River, from its confluence with the Libeanu River to its confluence with the Motima River, then following the Motima River upstream to its confluence with the Ngwakade River ;

- to the south: the section of the main road between the villages of Mbokutu and Bonguma ;

- to the east: the Ngwakade River from its junction with the Motima River to where it meets the track leading to the village of Monzamba-Moke; and finally along sections of this track and the secondary road to the village of Bonguma;

- to the west: the Libeanu River to where it meets the secondary road, then following the secondary road to the village of Mbokutu.

This forest massif extends between latitudes 2°10' and 2°40' North and longitudes 20°30' and 21°20' East (see Map 1).

A complete set of geodetic coordinates defining the concession boundary is available and has been submitted separately as a KML file.

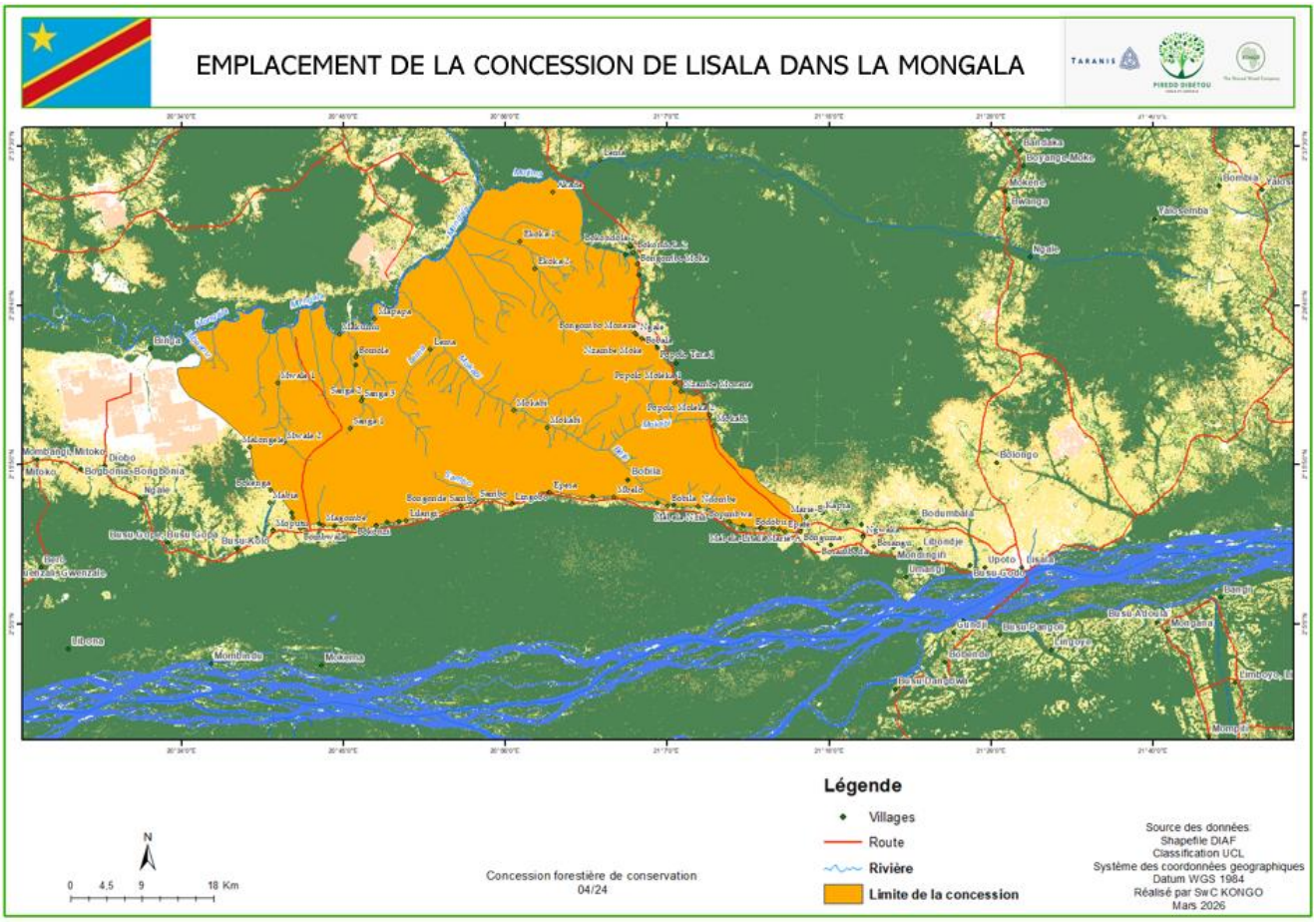


Figure 7 - Lisala concession localisation

Source: sWc Kongo, 2026

2.1.16.2 Definition of the Project Area and Project Zone

The PA corresponds to the forest areas within the Lisala concession where project activities aim to generate net climate benefits, notably through the avoidance of deforestation and forest degradation and the conservation of forest carbon stocks (Section 3.1.3)

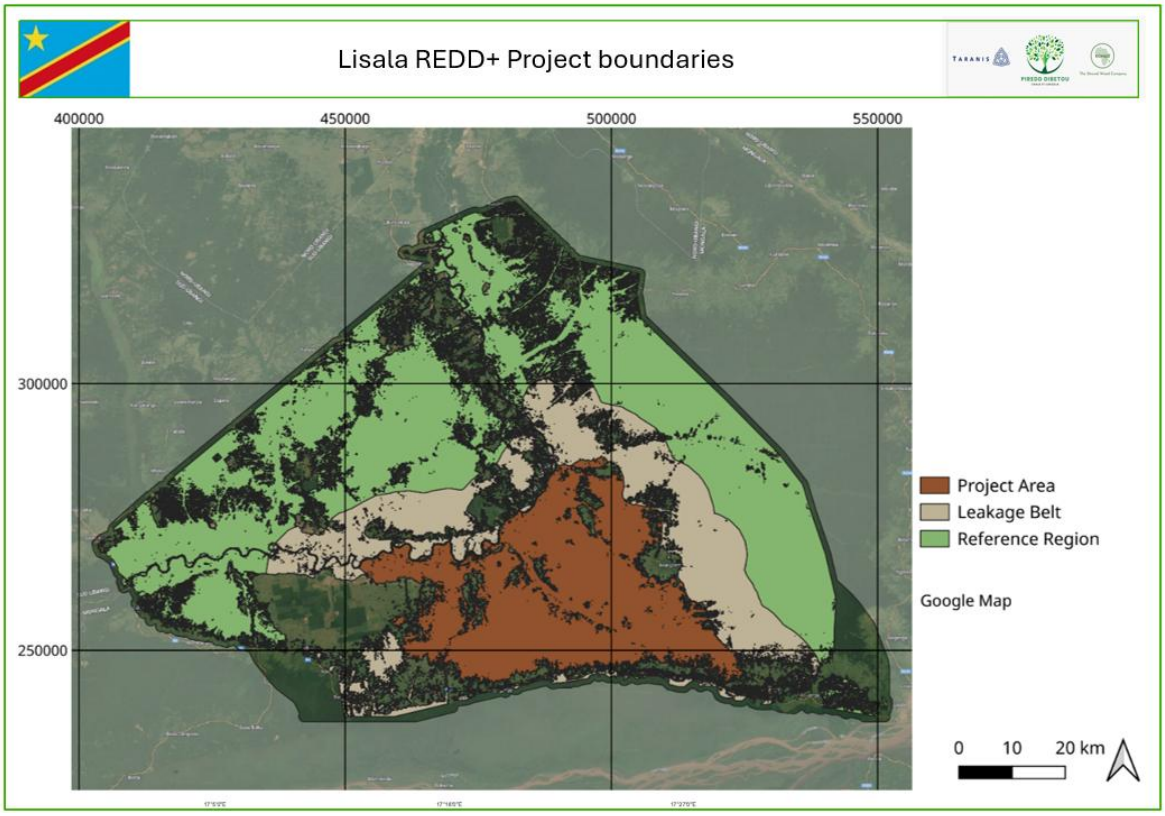


Figure 8 - Lisala REDD+ Project Area

The PZ is defined as the broader area encompassing the PA, the Leakage Belt (LB) and leakage management zone - where project activities are implemented and where direct or indirect impacts may occur. This includes forest areas, agricultural and fallow mosaics, village lands, infrastructure corridors, and areas targeted for community development, alternative livelihood activities, participatory land-use planning and governance strengthening. All communities and stakeholders identified are located within, or directly linked to, this PZ.

Consequently, the PZ extends beyond the boundaries of the Concession. Indeed, NRMPs from some villages inside the Concession extend outside the Concession. Furthermore, 10 of the 76 villages taking part in the project are located outside the concession.

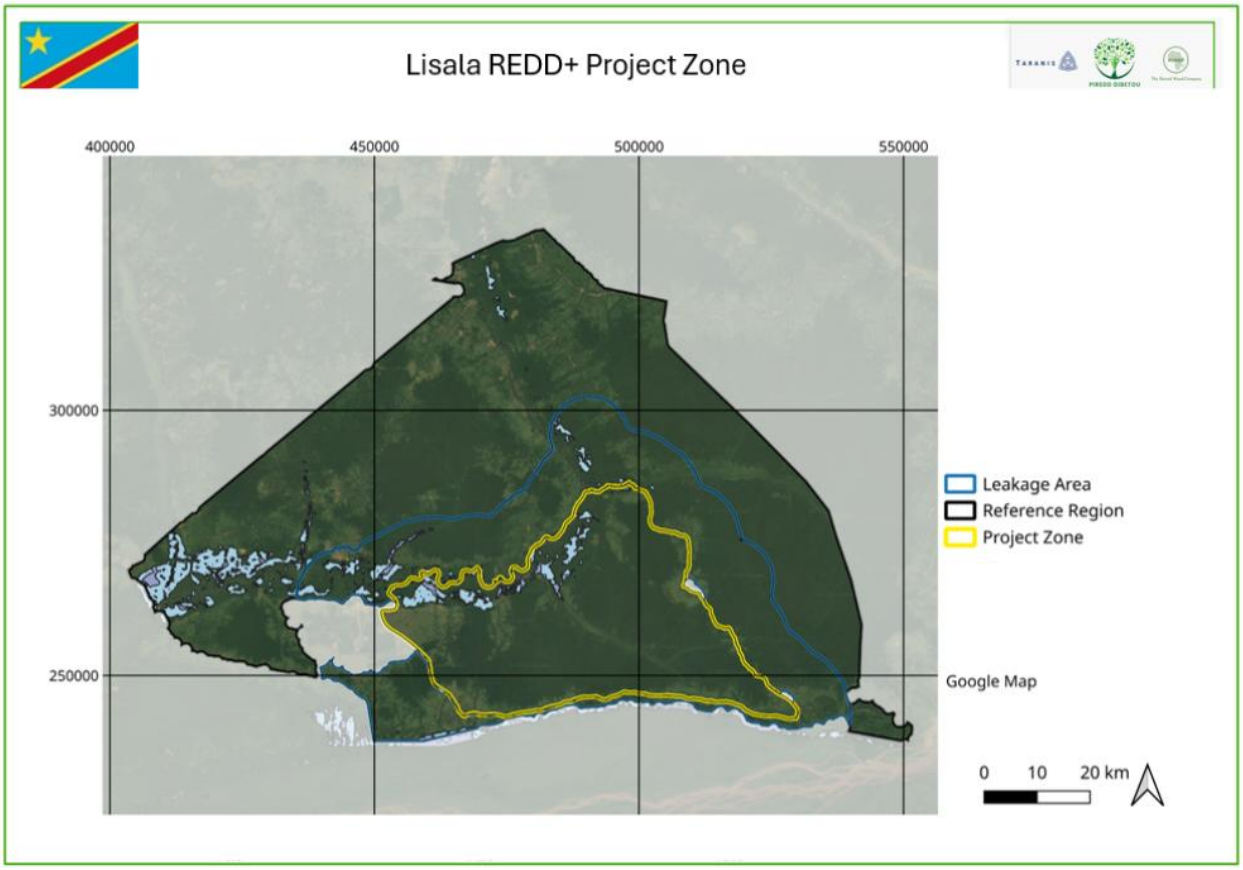


Figure 9 - Lisala REDD+ Project Zone

Source: sWc Kongo

2.1.17 Project Activities and Theory of Change (VCS, 3.6; CCB, G1.8)

The Project's theory of change is based on the assumption that strengthening inclusive local governance, supporting sustainable livelihoods and reducing socio-economic pressures on forests will collectively lead to reduced deforestation, improved ecosystem integrity, enhanced carbon storage, and improved well-being of local communities.

Project activities target all populations living within the Concession, with activities implemented across 76 villages.[37] Special attention is given to women, youth, and vulnerable groups to ensure equitable participation and benefit-sharing. Previously exploited areas of the Concession are set aside for conservation, while sustainable production activities are promoted in appropriate zones.

The Project is implemented through eight interlinked components (A–H), which together form a results chain from activities to outputs, outcomes, and long-term impacts.

[37] 66 villages among the 67 villages inside the Concession, as well as 10 villages located outside the Concession participate to the Project (Section 2.5.7)

- Component A: Establishment of a governance framework,
- Component B: Institutional support,
- Component C: Implementation of planned investments, as identified in the NRMPs,
- Component D: Other investments in LDCs,
- Component E: Development of value chains based on perennial crops,
- Component F: Investments in infrastructure of common interest to restore connectivity between territories,
- Component G: Support for the most vulnerable communities,
- Component H: Support for family planning.

2.1.17.1 Overview of the Project activities

Table 12 - Overview of the project activities of the Lisala Project

Activity description	Expected climate, community, and/or biodiversity		
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)
<u>Component A: Establishment of a governance framework</u> The Project supports the creation or strengthening of LDCs at village level, in line with national legislation. LDCs lead participatory processes to develop NRMPs, based on land-use mapping, biodiversity inventories, analysis of deforestation drivers, and identification of sustainable land-use options.	• Functioning LDCs with legal recognition • Participatory NRMPs covering village territories • Mapped land-use plans and biodiversity inventories	• Improved local governance of land and natural resources • Increased participation of women, indigenous peoples, and vulnerable groups • Collective decision-making on sustainable land use	NRMPs guide sustainable resource use, reduce uncontrolled forest degradation, and protect high-biodiversity areas, contributing to avoided emissions, enhanced carbon storage, improved ecosystem integrity, and reduced social inequality.
<u>Component B: Institutional support.</u> The Project strengthens decentralized government services responsible for agriculture, rural development, and forest management by supporting regulatory implementation, aligning institutional mandates, providing training and equipment, supporting the RAMC (Rural Agricultural Management Councils) at sectoral level, facilitating field missions, and establishing grievance and appeal mechanisms	• Improved regulatory frameworks and operational capacity • Trained and equipped decentralized services • Functional grievance and redress mechanisms	• Enhanced coordination between institutions and communities • Increased compliance with land-use and forest regulations	Stronger institutions ensure long-term sustainability of project outcomes, reinforce transparent and accountable governance, and support effective forest protection and management.
<u>Component C: Implementation of planned investments, as identified in the strategic management plans.</u>	• Adoption of sustainable agricultural	• Increased household income	These activities reduce pressure on forests, enhance biodiversity recovery in

Under the NRMPs (Section 2.1.17.2) and to support sustainable livelihoods, the Project will finance inputs, agroforestry development, perennial crops, and PES.	and agroforestry practices • Protected forest and savannah areas • Improved productivity on existing agricultural lands	• Increased food security and resilience • Reduced expansion of agriculture into forests	degraded areas, and contribute to emission reductions and climate change mitigation.
<u>Component D: Other investments in LDCs</u> Support is provided to LDCs for complementary activities, such as establishing sustainable fisheries management, to encourage communities to develop and maintain livelihoods beyond agriculture.	• Sustainable fisheries management systems • Diversified income-generating activities	• Improved management of aquatic ecosystems • Reduced overexploitation of fish stocks	These measures contribute to biodiversity conservation, food security, and livelihood resilience
<u>Component E: Development of value chains from perennial crops.</u> The Project revitalizes value chains for perennial crops (e.g. cocoa, coffee, palm oil, rubber) through technical support, equipment provision, local processing, market access facilitation, fair trade certification, and partnerships with cooperatives and private operators.	• Strengthened producer organizations and market linkages • Increased value-added local production	• Improved and more stable farmer incomes • Reduced reliance on extensive, forest-based agriculture	Sustainable value chains decrease deforestation drivers while promoting long-term economic development compatible with forest conservation
<u>Component F: Investments in infrastructure of common interest to restore connectivity between territories.</u> The Project supports improvements in transport infrastructure, including rehabilitation of rural roads and tracks, and reconstruction of critical bridges to improve territorial connectivity.	• Improved transport and access infrastructure	• Enhanced access to markets, healthcare, and education • Reduced isolation of communities	Improved connectivity supports economic development without expanding agricultural frontiers, indirectly reducing pressure on forest ecosystems.
<u>Component G: Support for the most vulnerable communities.</u> The Project finances microprojects for indigenous populations using participatory approaches that respect cultural traditions and livelihoods.	• Strengthened cultural and social resilience	• Improved livelihoods of vulnerable communities and decrease discrimination	This component enhances social equity and ensures that REDD+ benefits are inclusive and culturally appropriate.

Component H: Support for family planning In partnership with local NGOs and the Ministry of Health, the Project promotes family planning, reproductive health, disease prevention, and education - particularly for women and girls.	• Increased access to family planning information and services • Improved health awareness	• Improved maternal and child health • Slower population growth rates • increased education for women and access to employment	Reduced demographic pressure contributes to long-term reductions in forest conversion and supports climate and biodiversity objectives.

Overall Results Chain

Collectively, these components address the social, economic, and institutional drivers of deforestation. By combining governance strengthening, sustainable livelihoods, infrastructure development, social inclusion, and population health measures, the Project achieves measurable climate mitigation through avoided deforestation, enhanced biodiversity conservation, and improved community well-being.

2.1.17.2 Focus on NRMPs activities

NRMPs are at the core of the Project's activities. NRMPs are community-based planning documents established by the LDCs in accordance with the Project Proponent . NRMPs provide a structured framework for communities to plan land use, manage natural resources, and define development priorities over a 10-year period. The first NRMPs were developed in 2026 for each of the 76 villages participating in the Project, through a participatory and inclusive process supported by AMAR. The 76 NRMPs cover a total area of 224 194 hectares (within and around the concession, Figure 10).

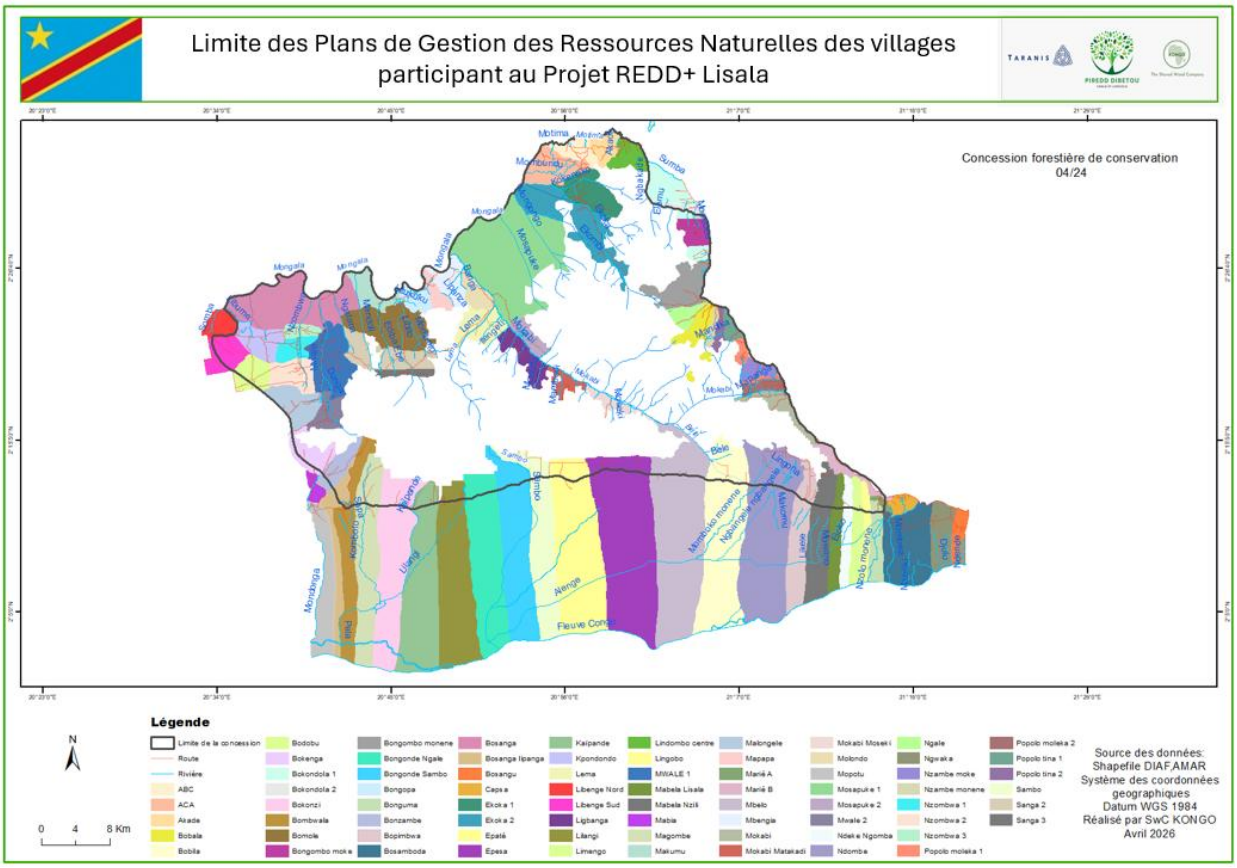


Figure 10 - Spatial division of the PZ into 76 NRMPs

The development of each NRMP begins with an assessment of current and projected population dynamics and associated livelihood needs. Based on this diagnosis, communities determine land-use allocations, resource management rules, and development activities, with the objective of ensuring long-term socio-economic development while promoting the sustainable use of natural resources.

The NRMPs establish a clear spatial organization of these land uses and identify Agricultural and Pastoral Zone (APZ), which reflect both existing land uses and anticipated future needs and include:

- existing mosaics of agricultural fields within forest areas, primarily for subsistence farming and food security;
- planned agricultural expansion areas;
- areas dedicated to perennial crops in secondary forest (e.g. cocoa and oil palm) to support income generation;

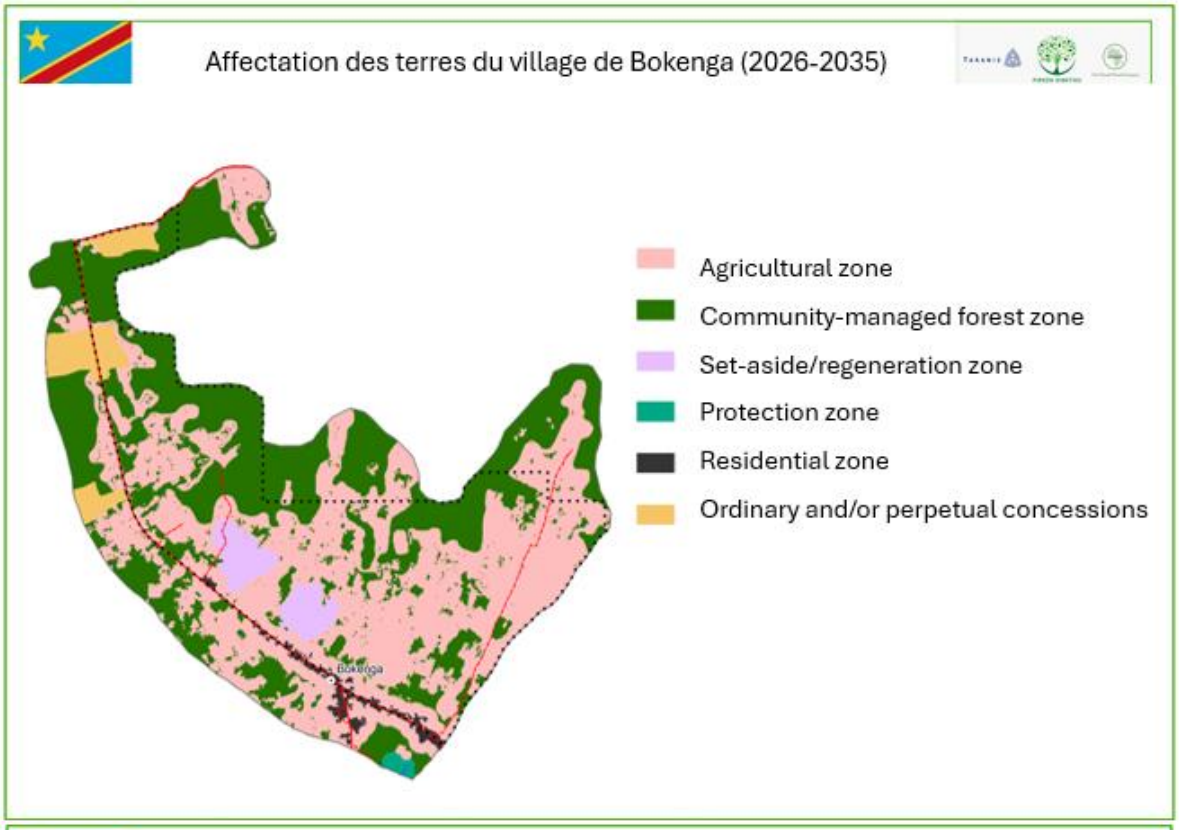
- agroforestry systems; and
- livestock and other complementary activities.

Of the 224 194 hectares under community management as defined in the NRMPs, 44 558 hectares are projected to be allocated to APZ by 2035.

Through the implementation of NRMPs, communities benefit from structured support aimed at restoring degraded lands and reducing pressure on surrounding forests. This support includes: (i) the development of perennial crop systems; (ii) strengthening agricultural value chains; (iii) sustainable intensification of production per unit area through improved inputs (improved seeds and planting materials) and soil fertility management practices (agroforestry).

In addition to agricultural production areas, NRMPs also identify zones under protection, including areas of High Conservation Value [38](HCV), recognized for their cultural value (HCV 6, see Section 2.5.4) or for their importance for biodiversity (HCV 1, 2, and 3, read Section 5.1.2). These zones with limited human activities ensure their long-term conservation and their surveillance by eco-guards (Section 5.4.1) curbs deforestation.

[38] The HCV concept was developed in the late 1990s by the Forest Stewardship Council, with contributions from environmental organizations such as WWF, to identify and protect forests with significant ecological, social, or cultural importance.



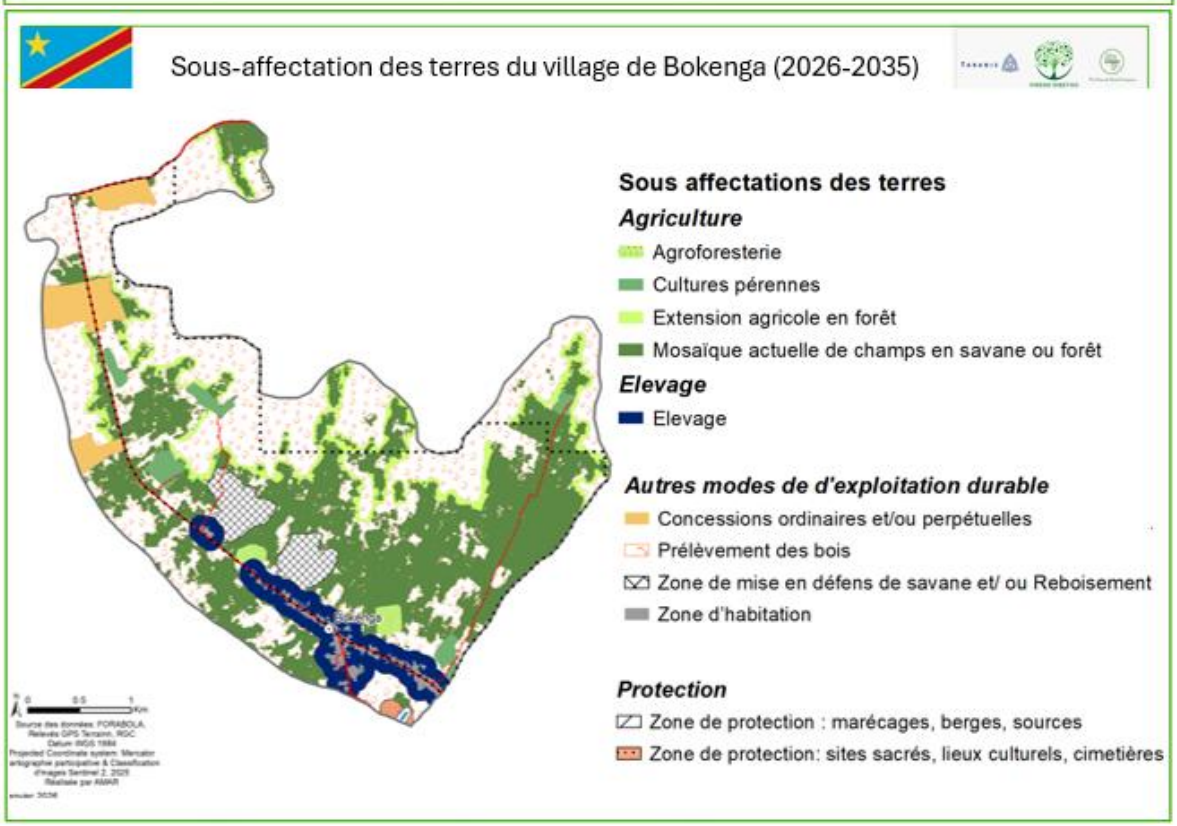


Figure 11 - Example of the demarcation of APZ and protected areas under the NRMP (2026-2035) for the village of Bokenga

Overall, NRMPs provide a spatially explicit framework that enables communities to organize their activities, limit uncontrolled expansion into forest areas, and balance development needs with forest conservation objectives.

2.1.17.3 Theory of change for biodiversity

In general, the cessation of logging activities and the implementation of forest monitoring will result in reduced degradation of forest ecosystems. More specifically, the development of sustainable agriculture, along with the financing of PES for these activities, will lead to forest conservation. The development of a sustainable hunting and fishing management plan will increase the abundance of available resources, while the establishment of firebreaks will reduce burned areas.

Taken together, these measures will result in an increase in forest cover and species diversity, as well as the restoration of ecosystems and biodiversity. The main impact of these measures is therefore the improvement of biodiversity within the PA (in terms of richness and abundance), supported by the restoration of forest ecosystems.

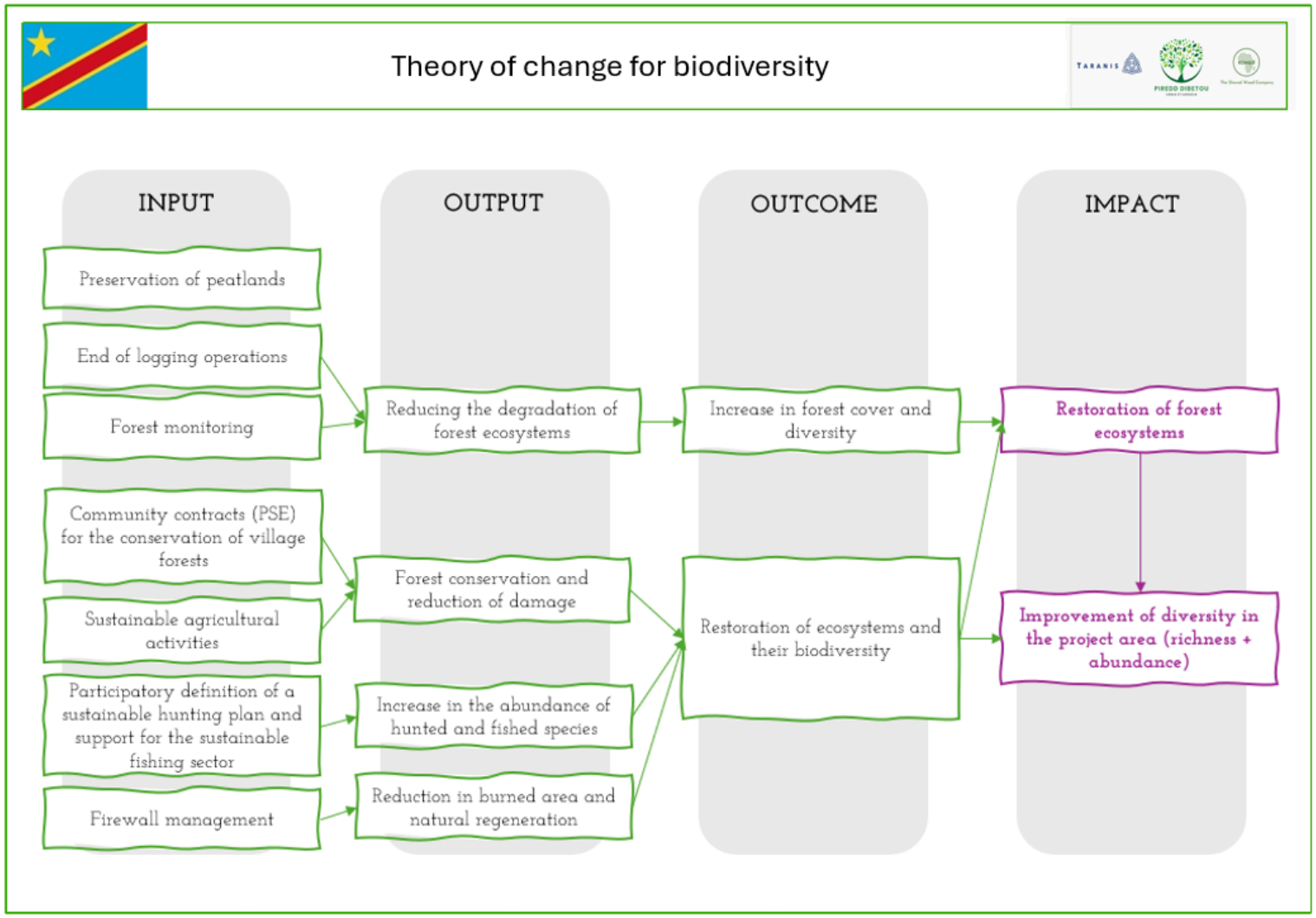


Figure 12 - Theory of change for biodiversity

2.1.17.4 Theory of change for communities:

The creation of LDCs and NMRPs will result in fostering participatory governance, which will strengthen the capacity of communities to take action to reduce poverty and improve their living conditions. Additionally, support for upstream production (such as nurseries and improved food crop varieties) will increase food production, thereby ensuring food security for local populations. Technical assistance, along with the development of downstream value chains, will enhance the value of production and market access, generating new income for farming households. Investments in infrastructure (healthcare, schools, roads) will also contribute to improving the living conditions of communities. Collectively, these activities will have the impact of reducing poverty and improving the quality of life for local populations.

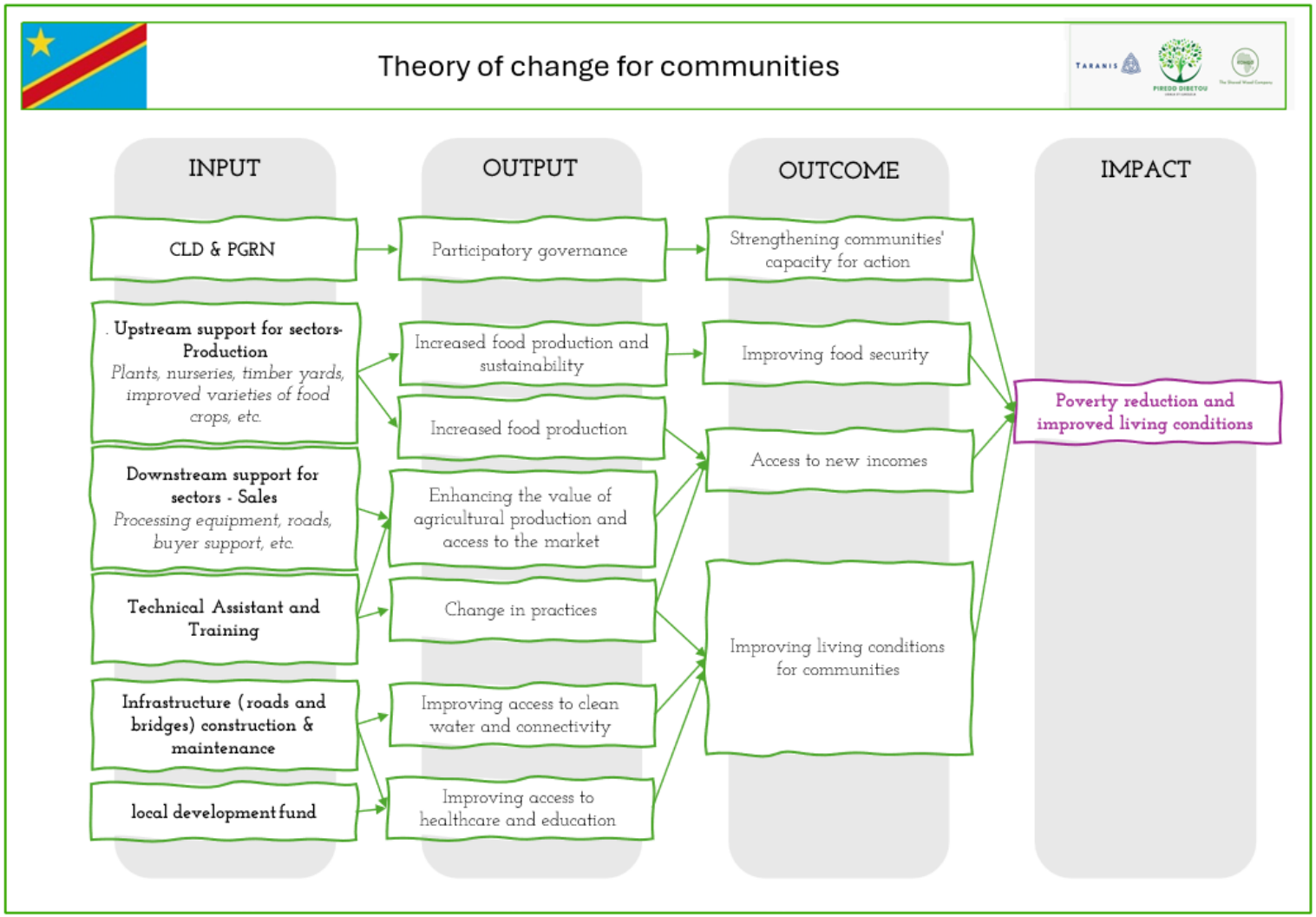


Figure 13 - Theory of change for communities

2.1.18 Sustainable Development Contributions (VCS, 3.17)

The DRC is committed to achieving sustainable development through the implementation of the 2030 Agenda and has integrated the Sustainable Development Goals (SDGs) into its national strategies. The Project is fully aligned with these national priorities, particularly those addressing poverty reduction, food security, social inclusion, institutional strengthening, climate action and the conservation of natural resources.

Table 13 - Sustainable development contributions

Poverty reduction and economic development	The Project contributes to **poverty reduction and economic development (SDG 1 and 8)** by promoting diversified and sustainable livelihood opportunities. Through support to sustainable agriculture, agroforestry and perennial crop value chains, combined with training, technical assistance and PES, the Project increases household incomes, improves productivity and strengthens economic resilience. The establishment of LDCs and improved territorial connectivity further support economic inclusion by enabling access to markets and services for isolated communities.	
Improving food security	**Food security and zero hunger (SDG 2)** are addressed by supporting climate-resilient and sustainable food systems. The Project improves access to training, diverse and resilient inputs and processing facilities for smallholder farmers and integrates land-use planning through NRMPs. These measures increase food availability, stabilize production and reduce pressure on forest ecosystems.	
Improving health and well-being	The Project also contributes to **health and well-being (SDG 3)** through awareness-raising on family planning and the prevention of communicable diseases, in collaboration with local NGOs and public health services. Community-managed LDF enable investments in health infrastructure, improving access to basic healthcare services.	
Facilitating access to education	**Quality education (SDG 4)** benefits from similar mechanisms, with a part of LDF dedicated to school construction and renovation.	
Reducing inequalities and improving gender equality	**Gender equality and reduced inequalities (SDGs 5 and 10)** are cross-cutting priorities. The Project ensures the meaningful participation of vulnerable groups (women, indigenous peoples…) in decision-making processes through inclusive LDC governance, dedicated consultation spaces and	

	FPIC procedures. Targeted microprojects for indigenous people and capacity-building activities support social inclusion and equitable benefit sharing.	
Supporting sustainable communities, climate action and biodiversity conservation	The Project supports **sustainable communities, responsible consumption and production, climate action and biodiversity conservation (SDGs 11, 12, 13 and 15)** by reducing deforestation and forest degradation, protecting HCV areas, restoring fire-degraded savannahs and fallow lands, and promoting agroforestry and sustainable resource management. These actions enhance ecosystem resilience, preserve biodiversity in the Congo Basin and contribute to climate change mitigation and adaptation.	
strengthening institutions and partnerships	the Project strengthens **institutions and partnerships (SDGs 16 and 17)** by supporting transparent, accountable and participatory local governance structures, reinforcing decentralized public services, and fostering partnerships with NGOs, cooperatives and private actors. Carbon finance and formalized value chains generate fiscal revenues and contribute to domestic resource mobilization.	

2.1.19 Implementation Schedule (CCB, G1.9)

The Project is divided into several major phases:
The development phase began in 2022, with a comprehensive due diligence, meetings with authorities, and initial field studies.
The implementation of the Project then proceeded as follows:

- First, the governance framework was established. This phase consisted of raising community awareness about the Project, obtaining FPIC, establishing LDCs, and developing NRMPs through a participatory approach. This phase was carried out with the support of the Congolese NGO AMAR, which has extensive expertise in community consultations and NRMP development.
- Once the NRMPs were developed, the second phase began and consists of implementing the activities outlined in the NRMPs and ensuring their follow-up.

Finally, procedures for monitoring project participants will be put in place to track the progress of actions and their impacts.

Table 14 - The Project's development schedule

Date	Milestone(s) in the project's development
October 2022-May 2024	Due diligence, including field studies to assess community interest in the Project
May 2024	Project presentation to the MEDD and launch of negotiations to set up a proper legal and fiscal framework with the view to securing a proper project implementation in the long run
June-December 2024	Finalization of all the contractual arrangements prior to project commissioning
December 2024	Signing of the Concession Contract (CCFC No.04/24) between Taranis Congo and the MEDD

Table 15 - The Project's implementation schedule

Date	Milestone(s) in the project's implementation
March 2025	Takeover of the Lisala concession by Taranis Congo and sWc Kongo
March 2025	Project Start Date and start date of GHG accounting period
March to December 2025	Recruitment of project staff (local experts, agronomists, social facilitators, etc.)
March 2025 to March 2026	Project Design Document (PDD) writing
May 2025 to March 2026	ESIA writing
June 2025	Information meeting on the launch of the Project with provincial and territorial authorities
June to August 2025	Raising community awareness about the Project and obtaining FPIC (AMAR)
September to October 2025	Creation of LDCs in all participating villages
November 2025 to March 2026	Development of NRMPs in all participating villages
December 2025 to March 2026	Construction of surveillance base for the eco-guards within the Concession
February 2026	Negotiation and establishment of the LDF for the rehabilitation of public infrastructure (schools and health centers)
2026	Validation of the Project by a VVB
2026	Project homologation by the DRC administration (CNREDD)
2026	Implementation of the Environmental and Social Management Plan resulting from the ESIA with operational procedures training
2025-2055	Launch of community agricultural activities based on NRMPs (signing of contracts for PES) Launch of trainings and awareness campaign in collaboration with local NGOs Development of basic infrastructures financed by the LDF

	Establishment of the monitoring process
2027	First monitoring report
2027	First verification by a VVB
2055	End of the first crediting period (30 years)
2115	End of the crediting period

2.1.20 Risks to the Project (CCB, G1.10)

Table 16 - Risks to the Project

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Risk of Non-permanence	Risk of increased deforestation and forest degradation despite project activities, potentially undermining long-term carbon storage and biodiversity benefits.	The success of the Project and the protection of forests largely depend on the communities' acceptance of the Project. The Project implements alternative activities to reduce the need for forest space and increase resources for subsistence. This will help reduce pressure on forests.
Rebound effect on deforestation and biodiversity	Increased income could indirectly lead to renewed pressure on forests, reducing climate and biodiversity gains.	To access the project's benefits - such as improved seeds or PES - and increase their incomes, communities commit to respecting the geographic boundaries of the NRMPs and therefore respecting the protected areas.
Risk of leakage outside the Concession	Continued deforestation and forest degradation in surrounding areas could reduce net climate benefits and negatively affect regional biodiversity.	The Project aims to minimize the risk of leakage through: - Awareness campaigns on sustainable hunting and fishing practices; - The introduction of alternative and sustainable agricultural activities that will enable intensified production on small areas (avoiding slash-and-burn agriculture); - Monitoring of changes in forest cover in the LB (satellite).
Increase of climate change impact	Extreme climate events (droughts, floods, storms) could cause forest loss, biodiversity degradation, and reduced carbon sequestration capacity.	No mitigants for these large-scale natural hazards
Fire risk	Although natural fires are rare, slash-and-burn practices in surrounding areas could lead to accidental fire spread into the PZ,	The Project provides for measures to contain fires with firebreaks.

	damaging forests, savannahs or degraded fallow lands.	
Biodiversity degradation	Continued biodiversity loss due to deforestation, unsustainable hunting, and fishing practices could compromise ecosystem integrity, carbon storage, and community livelihoods dependent on natural resources.	The Project will conduct biodiversity assessments, identify and geo-localize HCV areas, implement a biodiversity management plan (including actions for endangered species), deploy eco-guards, and conduct awareness campaigns.
Limited participation of vulnerable group	Exclusion of women, youth, or marginalized groups may weaken social legitimacy, reduce effectiveness of land-use planning, and limit the sustainability of project outcomes.	Inclusive governance inside the LDCs, targeted outreach, and social monitoring systems ensure equitable participation and benefit-sharing.
Pre-existing conflicts and land tenure issues	Historical land disputes and unresolved conflicts may weaken FPIC, undermine community trust, reduce participation in project activities, and compromise long-term forest conservation and biodiversity protection.	The Project implements formal FPIC processes, participatory land-use mapping validated by customary authorities, regular community consultations, and conflict prevention mechanisms.
Weak institutional and governance capacity	Insufficient coordination or capacity of local institutions could delay implementation of NRMPs and weaken enforcement of conservation measures.	Capacity-building of LDCs, decentralized government services, and local NGOs is integrated into project design.

2.1.21 Benefit Permanence (CCB, G1.11)

The Project is designed to generate long-term climate, community, and biodiversity benefits by transforming land-use practices and strengthening local governance systems so that sustainable resource management continues beyond the project lifetime.

Climate benefits are expected to persist because the Project supports a long-term shift toward zero-deforestation land-use practices through participatory land-use planning, improved agricultural productivity within designated APZ (Section 2.2.5), and continuous forest monitoring. By making sustainable production systems more productive and economically attractive than forest clearing, deforestation pressures are expected to decline permanently while ecosystem resilience to climate risks progressively increases.

Biodiversity benefits are sustained through the long-term protection and improved management of forest ecosystems, including the conservation of HCV areas and restoration of degraded zones. Community awareness programs and participatory natural resource management promote lasting changes in hunting, fishing, and land-use practices, allowing natural regeneration processes and wildlife populations to recover over time.

Community benefits are designed to endure through capacity building and institutional strengthening. Continuous training in sustainable agriculture, agroforestry, and natural resource management,

combined with support from local NGOs and technical partners, enables communities to maintain sustainable livelihoods independently over time. The establishment and strengthening of LDCs, and the implementation of NRMPs, embed participatory governance and sustainable resource management into local institutions, ensuring that project practices continue after the project period.

Through this integrated approach combining sustainable livelihoods, community governance, and ecosystem conservation, the project creates social, economic, and environmental conditions that support the permanence of benefits beyond the project lifetime.

2.1.22 Financial Sustainability (CCB, G1.12)

Taranis Operations Limited manages three strategic funds: the Carbon Ventures Fund, dedicated to investing in carbon circularity; the Energy for Africa Fund, which focuses on developing sustainable energy access across the African continent; and the Nature-Based Solutions Fund, dedicated to restoring and protecting ecosystems. The Nature-Based Solutions strategy supports high-quality projects that restore ecosystems, reduce emissions, and generate long-term environmental and social value. By 2030, Taranis aims to "lead climate action through a portfolio of impactful carbon projects"[39].

Taranis Operations Limited has committed to ensuring the financial sustainability of the Project by providing sufficient and predictable funding for the full implementation of project activities in order to achieve the project's climate, community and biodiversity benefits. This commitment is rooted in the Framework Agreement signed with the MEDD, which guarantees an adequate flow of funds to support the Project's ambitions.

The financial model of the Project is based on projected revenues from the generation of verified carbon credits. Expected carbon credit volumes shall provide a stable flow of revenue to cover operational costs and community investments over time.

Details of the Project's financial sustainability are considered commercially sensitive and are therefore not presented in this public version. Such information can be made available to the VVB and Verra upon request.

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Conditions Prior to Project Initiation and Land Use Scenarios without the Project (VCS, 3.13; CCB, G2.1)

2.2.1.1 Conditions existing prior to project initiation and baseline consistency

All historical and ongoing GHG emissions observed within the PA result from pre-existing land-use practices and socio-economic drivers, such as small-scale shifting cultivation (slash-and-burn agriculture)

[39] https://taranis.eu/nature-based-solutions/

and fuelwood and charcoal production, entirely independent of any project-related activities. The Project intervenes in response to these dynamics and does not introduce any new emission-generating activities.

The baseline scenario corresponds to the land-use and deforestation dynamics existing prior to project initiation. The reader is referred to *Section 3.1.4 (Baseline Scenario)* for a detailed description and quantification of these dynamics.

2.2.1.2 Ecosystem type

The PA is located within the Congo Basin tropical rainforest ecosystem, characterized by tropical dense forests and tropical swamp forests, with high levels of biodiversity and significant carbon storage potential. This ecosystem is globally recognized for its ecological importance and role in climate regulation.

2.2.1.3 Current and historical land use

Historically, the Lisala concession was predominantly covered by intact and semi-intact tropical forests and used by local communities for subsistence activities such as hunting, gathering, and small-scale shifting agriculture. In previous decades, the area was formally allocated as a commercial logging concession and subject to regulated industrial timber harvesting.

Despite this formal conservation status since the end of the logging concession, the Lisala concession experienced increasing unplanned deforestation and forest degradation driven by local community activities, including slash-and-burn agriculture, charcoal production, and fuelwood extraction. These pressures have intensified in recent years due to rapid population growth and limited livelihood alternatives, leading to progressive forest loss prior to project initiation.

2.2.1.4 Likely land-use scenarios in the absence of the Project

In the absence of the Project, unplanned deforestation and forest degradation would be expected to continue within the Concession. The most likely land-use trajectories include the continued expansion of slash-and-burn agriculture driven by population growth and land scarcity; increased charcoal production to meet regional energy demand; informal timber extraction for local consumption and small-scale trade; and infrastructure development occurring without integrated land-use planning.

These drivers would result in progressive forest loss and fragmentation, leading to declining carbon stocks and increasing threats to biodiversity. These land-use change dynamics form the basis of the baseline scenario and have been modeled accordingly, reflecting a continuation of the conditions existing prior to project initiation (see Section 3.1.4).

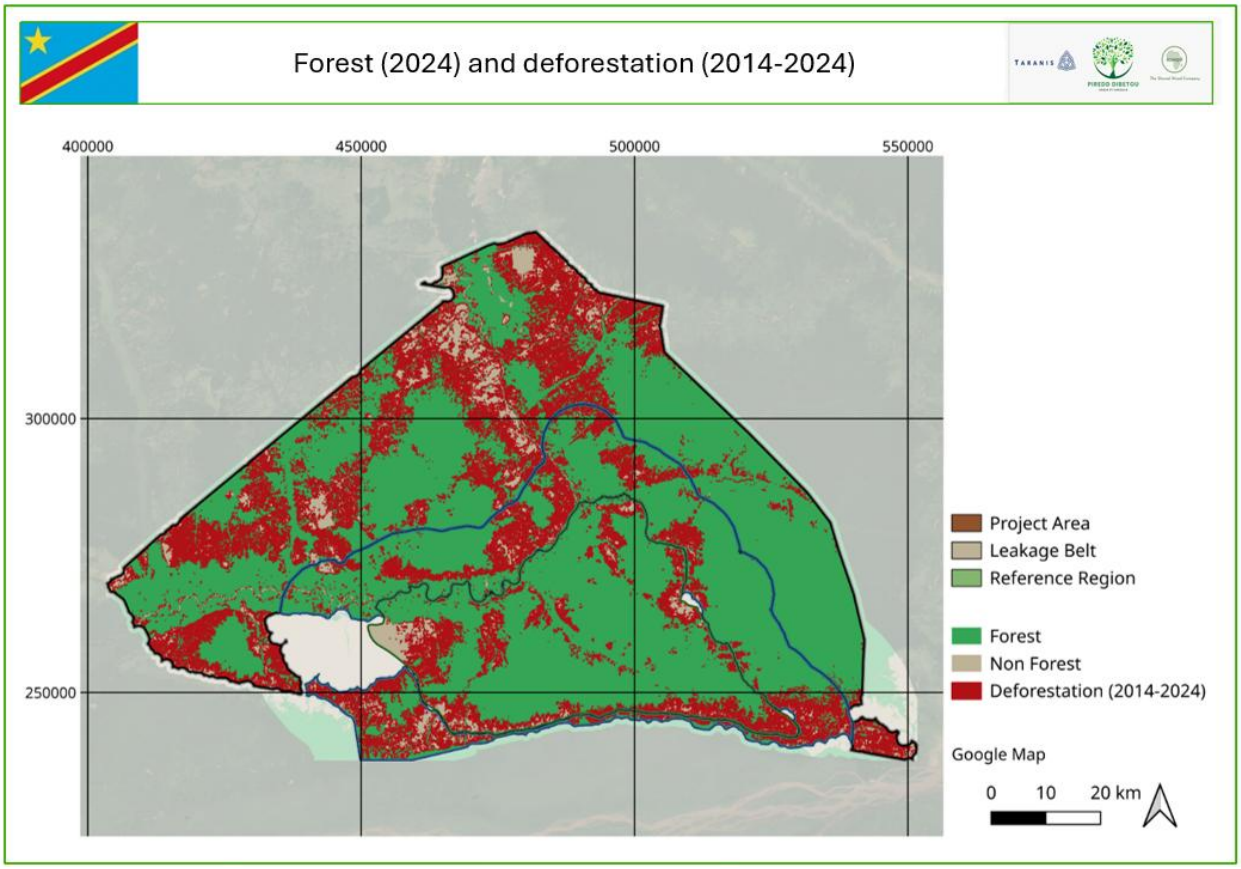


Figure 14 - Forest (2024) and deforestation (2014-2024)

2.2.2 Most-Likely Scenario Justification (CCB, G2.1)

The most likely without-project land use scenario for the Lisala concession is first based on documented socioeconomic analyses and observed land-use trends prior to project implementation. Socioeconomic studies conducted by Forabola (2023)[40] and AMAR (2025)[41] describe persistent poverty, strong dependence on forest resources, limited access to technical assistance, and sustained population growth within the PZ. These conditions are recognized drivers of land-use change and deforestation in the region.

In the absence of the Project, current trends would continue. Population growth, combined with slash-and-burn agriculture and limited livelihood alternatives, would lead to the progressive expansion of agricultural areas and ongoing unplanned deforestation. The geographical isolation of the area and limited government support have encouraged subsistence-based livelihoods while limiting the development of sustainable resource management systems. Forest clearing therefore remains the primary means for communities to secure food, income, and energy. Forest degradation is already affecting local livelihoods. Declining availability of forest resources, including reduced game and fish stocks, has been observed[42]. In addition, the cessation of logging activities - previously a major source of employment and public funding - would

[40] Etude d'impact environnemental et social des activités de l'exploitation de la concession forestiere n°36/11 de la societe Forabola, 2023
[41] Refer to the household survey conducted by AMAR in 2025 as part of the ESIA
[42] Field discussions with social facilitators, eco-guards, and LDC members (February 2026)

likely slow local economic development in the absence of alternative investments. This would contribute to the deterioration of basic infrastructure and reinforce the isolation of the territory.

Under this most likely scenario, deforestation and forest degradation would continue due to:

- Population growth and land scarcity;
- Continued reliance on slash-and-burn agriculture;
- Lack of technical assistance and economic diversification;
- Limited public and private investment.

Please refer to Section 3.1.4 for a more detailed scenario. A remote-sensing analysis was conducted to assess historical land-use change and deforestation trends in the PZ (Section 3.3.1), confirming the results of socio-economic studies.

2.2.3 Community and Biodiversity Additionality (CCB, G2.2)

In the absence of the Project, the climate, community, and biodiversity benefits claimed by the Project would not occur. Most of the justifications are given in Section 3.1.4 and Section 3.1.5.

2.2.3.1 Absence of community and biodiversity benefits without the Project

Please refer to Section 3.1.4.1.

Without the Project, community and biodiversity benefits would not materialize due to structural constraints affecting the PZ, including:

- Geographical isolation and limited access to public services, which restrict access to sustainable economic opportunities;
- Continued unregulated exploitation of natural resources (slash-and-burn agriculture, poaching, informal logging), which remains the primary means of subsistence and income generation for local communities;
- Lack of economic incentives and technical support for community-based conservation or sustainable land-use practices;
- Increasing pressure on forest resources driven by population growth and limited livelihood diversification.
- Non-sustainable hunting practices

Without the Project's targeted interventions - such as technical assistance, strengthened local governance, carbon revenue-sharing mechanisms, and the development of sustainable economic alternatives - no financial, institutional, or operational framework exists that would enable these benefits to emerge independently.

2.2.3.2 Role of laws, regulations, and governance in the absence of the Project

The RDC has a legal framework governing forest management and environmental protection (the 2002 Forest Code, the 2014 Nature Conservation Act, and the national REDD+ policy). However, enforcement of these laws remains weak or absent in many remote forest areas.

Key governance constraints include:

- Limited institutional capacity of decentralized forestry, environmental, and land administration services;
- Overlapping and sometimes conflicting mandates between customary, local, and State authorities;
- Insufficient financial and logistical resources for monitoring and enforcement;
- Absence of an effective rural land registry, limiting the implementation of land-use planning.

Moreover, none of the Project activities are legally required at the local level, and existing legal provisions related to forest protection are not effectively enforced in the PA.

2.2.3.3 Barriers preventing project activities under the without-project scenario

Please refer to Section 3.1.4.1 (Step 2 – Application of VT0001 barrier analysis) and Section 3.1.5.2.

2.2.4 Benefits to be used as Offsets (CCB, G2.2)

In the short term, the Project is not claiming any other offsets or credits from the community or biodiversity benefits generated by the Project. Therefore, additionality does not need to be established for any benefits intended for this purpose.

2.3 Safeguards and Stakeholder Engagement

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

The identification of stakeholders potentially impacted by the Project was conducted through a multi-step process.
Prior the start of the Project, existing socio-economic surveys[43] and Forest Management Plan [44] from the previous concession holder that undertook logging activities, were reviewed to gather baseline information on local communities and other relevant stakeholders. This provided a comprehensive understanding of the social and economic context as well as the key actors involved or affected by forest management in the area.

Following this desk review, consultations were held with all relevant stakeholders, including local communities, customary authorities, local government representatives and civil society organizations. These consultations were conducted from May 2025 to March 2026 by AMAR and sWc Kongo, and also

[43] Forabola, Etude d'impact environnemental et social des activités de l'exploitation de la concession forestiere n°36/11 (2023)

[44] Forabola, Forest Management Plan, 2021

formed part of the ESIA process. This ensured that the engagement was inclusive, participatory, and aligned with regulatory requirements.
The process ensured that all voices were heard, concerns were documented, and expectations were considered in the project design. This combined methodology of leveraging existing data, integrating consultations within the ESIA framework, and engaging stakeholders directly has ensured a robust and transparent identification of all stakeholders likely to be impacted by the Project.

2.3.2 Stakeholder Descriptions (VCS, 3.18, 3.19; CCB, G1.6, G1.13)

Table 17 - Communities in the Lisala REDD+ Project

Communities	Rights, interest, and overall relevance to the project
Local Communities : 77 villages within the PZ (66 inside the Concession), mainly located along the main roads	Hold customary rights of access and use over land and forest resources for agriculture, fishing, hunting, and collection of forest products. They are the primary stakeholders affected by project activities and key beneficiaries through livelihood support, community investments, and participation in land-use planning and forest management.

Table 18 - Community groups in the Project

Community groups	Rights, interest, and overall relevance to the project
Customary authorities and village leaders	Hold traditional governance roles over land allocation and natural resource management. They play a central role in consultations, FPIC processes, land-use planning, conflict resolution, and local decision-making.
LDCs	Represent communities in project governance, support implementation of NRMPs, and oversee community development priorities and benefit-sharing at local level.
Farmers and smallholder producers	Depend on agriculture for livelihoods and are directly involved in adopting sustainable agriculture and agroforestry practices supported by the Project to reduce pressure on forests.
Hunters	Local communities traditionally depend on hunting for subsistence and income. The Project promotes sustainable resource use and alternative livelihoods to reduce pressure on wildlife while maintaining local livelihoods, as anti-poaching measures will be more strictly enforced.

Fishermen	Fishing is an important livelihood activity in the PZ. The Project supports sustainable fishing practices and diversification of income sources to ensure long-term resource availability.
Charcoal producers	Charcoal production represents a major source of income but contributes to forest degradation when wood is harvested from the natural forest. The Project introduces alternatives such as community woodlots to reduce pressure on natural forests while maintaining income opportunities for producers.
Timber harvesters	Timber harvesting supports local livelihoods but can degrade forests if unsustainable. The Project encourages improved land-use management and alternative income activities to reduce pressure on forest resources.
Non-Timber Forest Products (NTFP) collectors	Many households depend on NTFP for food and income. The Project promotes sustainable harvesting and value-chain development compatible with forest conservation.
Women and youth groups	Play key roles in household livelihoods, agriculture, resource management, and local economic activities. The Project promotes their participation in decision-making and access to economic opportunities.

Table 19 - Authorities interfering with the Project

Authorities	Rights, interest, and overall relevance to the project
MEDD	National authority responsible for environmental policy and REDD+ regulation. It grants and supervises conservation concessions, and ensures alignment with national climate policies and community rights.
Autorité de Régulation du Marché du Carbone (ARMCA)	National regulatory authority for carbon markets in the DRC which acts as the registry administrator for carbon projects in the country.
CNREDD	The National REDD Coordination Unit (CNREDD) is responsible for validating REDD+ projects in the DRC. It has developed criteria and framework indicators for monitoring REDD+ projects, which include project approval. It maintains the DRC's National REDD Register, a publicly accessible database of emission reduction projects. This registry allows projects to be registered and then certified, in order to delimit their footprint on a geo-referenced map. In this way, it prevents double registration of territories and double counting of carbon performance and transactions.

Congolese Environment Agency (CEA)	Authority in charge of reviewing and approving environmental and social studies and monitoring compliance. It ensures the Project meets national environmental and social safeguards.
Provincial Government and Provincial Assembly	Provincial authorities involved in project consultation and oversight, ensuring alignment with provincial development priorities and receiving legally defined concession revenues.
Decentralized Territorial Entities (DTEs)	Local administrative authorities involved in FPIC processes, community structuring, conflict resolution, and monitoring of project implementation at territorial and village levels.

Table 20 - NGOs involved in the Project

NGOs	Rights, interest, and overall relevance to the project
AMAR	National NGO facilitating FPIC, community structuring, and natural resource management planning, ensuring effective community participation and local governance strengthening.
Partner NGOs	GASHE[45] is a Congolese NGO supporting community development, environmental protection, and sustainable resource use, contributing to community awareness and monitoring of sustainable practices. GTCR-R [46] is a broad national network representing more than 650 Congolese environmental civil society organizations with a sound understanding of local contexts. The group disseminates information on the nature and causes of deforestation and forest degradation, as well as on the implementation of REDD+ and its impact on the rights of local communities and indigenous peoples in the DRC. The group also follows and supports the implementation of REDD+ programs in the DRC to ensure that they deliver tangible results for local communities. AJBS [47] is an NGO dedicated to the defense of human rights and the protection of nature. These organizations were associated with the mission to facilitate the obtaining of FPIC from local communities.

[45] Action Group to Save Humans and Their Environment, headquartered in Mbandaka and operating primarily in the Équateur Province.
[46] Groupe de Travail Climat Redd+ Rénové, headquartered in Kinshasa
[47] Action Jeune pour le Bien-être Social

Other partner NGOs	Other NGOs (e.g., organizations specialized in environment protection, agriculture, women empowerment…) operating in the Mongala Province will be contacted for potential future partnerships. Plateforms such as GTCR, GTCR-R and REPALEF [48] will help to identify and select local NGO partners.

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

Project documentation, including the PDD, validation and audit reports, and monitoring reports, will be made accessible to stakeholders throughout the project lifetime through digital channels. Documents will be publicly available online via the Verra registry and PDD and reports will be shared with the MEDD.

Key study results and monitoring outcomes will be communicated directly to communities during meetings with the LDCs, and through the Project's social facilitator, ensuring that information reaches stakeholders who may not have internet access.

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

Summary information on the Project, including objectives, planned activities, expected impacts, and monitoring results, has been and will continue to be actively disseminated to communities through culturally appropriate channels.

Project information is shared during village meetings and awareness sessions, supported by visual materials presented in French and Lingala to ensure accessibility for non-literate participants.

Information panels installed in each village will display key project information in simplified and visual formats. In addition, annual information sessions are planned to present monitoring and study results and allow communities to discuss outcomes and provide feedback.

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

Several informational and consultation meetings have been organized with communities, customary authorities, and institutional stakeholders prior to project implementation, and such meetings will continue throughout the Project lifetime.

<u>Meeting with provincial authorities</u>

A meeting was held in June 2025 in Lisala[49], the capital of Mongala Province, bringing together provincial authorities, civil society, and local NGOs and gathering 25 local authorities. The purpose of the meeting

[48] Réseau des Populations Autochtones et Locales pour la Gestion Durable des Ecosystèmes Forestiers de la RDC, headquarted in Kinshasa
[49] 10th June 2025, as written in AMAR's report: Facilitation of obtaining Free, Prior and Informed Consent (FPIC) from local communities (…), 2025

was to present the Project and its objectives, and to gather feedback, observations, and recommendations from key stakeholders.

Participants included the President of the Provincial Assembly, the Provincial Governor and his development advisor, provincial deputies, a representative of the parliamentary environmental committee, the Provincial Secretary of Public Administration, the President of the Provincial Forest Advisory Council (CCPF), and provincial ministers responsible for the environment, agriculture, land affairs, land use planning, and rural development. Also present were the Provincial Coordinator for Environment and Sustainable Development, inspectors from relevant sectors, as well as representatives of environmental civil society organizations and several local and regional NGOs.

Figure 15 - Presentation of the Project and discussion with provincial authorities

<u>Meeting with territorial and traditional authorities</u>

A second meeting bringing together the customary territorial authorities was organized in Lisala in June 2025 with 21 local authorities[50], with the aim of officially presenting the project, gathering the expectations of territorial stakeholders, and ensuring the smooth implementation of activities. The following people took part in these meetings: the deputy administrator of the territory (the administrator was represented), security and protocol officers, technical services (land use planning, rural development, Environment, Agriculture, Land Affairs, Planning), as well as representatives of civil society, the CCPF, local dignitaries, and the RAMC.

[50] 16th June 2025, as written in AMAR's report: Facilitation of obtaining Free, Prior and Informed Consent (FPIC) from local communities (…), 2025

Figure 16 - Information meeting with territorial authorities

<u>Meeting with the communities</u>

Community support for the Project is a necessary condition for its operation. In DRC, consultation with beneficiary communities to obtain their approval for REDD+ investments is a prerequisite, ensuring that the FPIC of local populations is respected. Please refer to Section 2.5.7.

Project presentation and awareness-raising meetings were held multiple times in each of the 77 villages over several days (around 5 days per villages) to:

- Raise community awareness about the Lisala REDD+ Project: its objectives, climate change, conservation, stakeholder roles, and potential benefits.
- Inform communities about the project's history and process, including the FPIC level, the bodies to be established, and member roles before signing the FPICs.
- Present the stakes of the LDCs and the various roles prior to electing members and establishing the LDCs.
- Facilitate working sessions to develop the NRMPs

Figure 17 - Sensibilization meeting on the Project in the villages

Figure 18 - Signature of presence list in the village

At community level, follow-up meetings will be regularly organized to provide updates on project activities, collect feedback, address concerns, and ensure continued community engagement. Those meeting will be led by the Project's social facilitator together with the LDCs and may target discussions with specific groups, including women, youth, and vulnerable groups, will also be conducted when necessary to ensure inclusive participation.

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

A survey conducted by AMAR as part of the ESIA process[51] identified environmental and social risks through participatory consultations with provincial, territorial, and village-level stakeholders, including local authorities, traditional leaders, women, and youth.

The identified risks are summarized in the following table :

[51] Socio-economic field survey conducted in December 2025 and January 2022 as part of the preparation of the ESIA

Table 21 - Risks from the Project and proposed mitigations

	Identified risk(s)	Potential impact of risk on stakeholders, ecosystem health, and biodiversity	Mitigation or preventative measure(s) taken
Natural and human induced risks to stakeholders' wellbeing	Social conflict	The arrival of the Project and the implementation of new activities generating new income may disrupt existing customary systems and create tensions between villages (frustration, jealousy, conflicts of interest).	Avoiding conflict is a priority for the Project: - All activities will be carried out on the basis of consultations and participatory mapping validated by all social strata in the villages. - The LDCs, representing the villages, will act as mediators between the Project and the communities. - A FGRM is set.
Risks to stakeholder participation	Unequal participation of vulnerable groups	Women, youth, and marginalized groups may be excluded from decision-making and benefit-sharing, reducing social equity and project effectiveness.	Inclusive governance rules, tailored grievance mechanisms, and social monitoring ensure equitable participation and benefit-sharing.
	Risk of conflicts related to land and resource management	The establishment of community agricultural activities on plots of land in APZ can lead to land conflicts if the boundaries of the land are not clearly defined.	The implementation of NRMPs is based entirely on a participatory approach. The delimitation of territories is then validated by the entire community and customary authorities. In addition, a FGRM is also put in place in case of conflict.
Working conditions	Labour and working conditions	Unsafe working conditions may lead to accidents, social grievances, and reduced project performance.	HSE policies, training programs, safety equipment, and an emergency, health, and safety plan are implemented.
	Risk of accidents	sWc Kongo agents will be required to work regularly in the field with communities and in the forest. Field activities may expose staff to physical hazards, affecting well-being and operational continuity.	Risks identified through the ESIA are addressed in the ESMP through specific safety measures, training, and monitoring.
Safety of women and girls	Gender-Based Violence (GBV) against female staff	Female staff may face increased exposure to GBV during field activities.	The Project will pay particular attention to the well-being of its employees and will implement specific safety measures to prevent GBV. Specific safety

			measures and prevention protocols are implemented to protect female employees.
	GBV among communities	The Project plans to promote the inclusion of women in local development activities and LDCs. Strengthening women's representation exposes them to risks of reprisals (jealousy, frustration, etc.) and may expose them to reprisals, harassment, or violence.	A confidential and specialized grievance channel for GBV cases is integrated into the FGRM and managed by trained female staff (Section 2.3.15)
Safety of minority and marginalized groups, including children	Child labour / forced labour	Risk of child labour associated with promoted activities, particularly under PES schemes. Child labour would constitute a violation of rights and undermine the Project's social sustainability.	Awareness campaigns, technical assistance, and support to education reduce the risk of child labour.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	Risk of pollution and contamination	Improper waste management could pollute soil and water and negatively affect community well-being.	The ESIA identified all potential waste generated by the Project and proposed an operational and effective waste collection and management procedure that significantly reduces risks.
Discrimination	Risk of marginalization of vulnerable groups	Discrimination may lead to exclusion from governance and unequal access to project benefits.	Women and vulnerable groups are integrated into LDCs, and social monitoring ensures non-discrimination.

2.3.7 Community Costs, Risks, and Benefits (CCB, G3.2)

Communities were provided with relevant, adequate, and understandable information on potential project costs, risks, and benefits prior to any decision regarding participation (Section 2.5.7).

During the information and awareness meetings organized at provincial, territorial and village-level public, stakeholders were informed of:

- expected benefits (livelihood diversification, improved agricultural practices, PES, strengthened local governance);
- potential costs and constraints (land-use rules and conservation measures);
- potential risks (social tensions, unequal participation, environmental pressures).

Information was provided in French and Lingala, using oral presentations and discussions adapted to local contexts, and time was allowed for questions and internal deliberation.

Following those awareness meetings, communities freely provided consent in the 77 villages identified in and around the Concession. 76 LDCs were established [52] or strengthened to ensure continuous access to information, participatory decision-making, and management of community costs, risks, and benefits throughout the project lifetime.

2.3.8 Information to Stakeholders on Validation and Verification Process (VCS, 3.18.6, 3.19; CCB, G3.3)

Community members will be informed in advance of the validation and certification procedures and schedule. Communication will mainly take place during information sessions organized by sWc Kongo agents with the LDCs in each village. Information sessions with the provisional verification and validation schedule will be sent to local and provincial authorities.

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

There will be opportunities for conversations and exchanges among community members, others stakeholders and the external auditor, during the validation and verification processes of the Project, regarding the visit to the PZ. The visit of the audit team in the field will be previously informed to the communities, to LDCs and other stakeholders, through transparent channels (information session in the villages) and in an appropriate language to all those involved.

sWc Kongo agents will accompany auditors and provide them with all the logistical resources they need to meet with the various stakeholders.

2.3.10 Stakeholder Consultations (VCS, 3.18; CCB, G3.4)

The Project design was developed through an inclusive and participatory consultation process conducted by sWc Kongo and AMAR between May 2025 and February 2026. Consultations were organized at the provincial, territorial, and community levels to ensure that all relevant stakeholders including local authorities, traditional leaders, women, Indigenous Peoples, youth, and civil society representatives could actively contribute to the definition of project priorities and activities (Section 2.3.5).

[52] Although the village of Sanga 1 had signed the FPIC, they are ultimately not part of the project due to internal conflicts within the village, which prevent the establishment of a stable LDC.

These consultations allowed participants to express their views, validate the proposed approach, and raise key considerations related to project implementation, governance, and community benefits. Feedback collected during these sessions was documented and used to refine and strengthen the Project's structure and operational framework.

Table 22 - Stakeholder consultation with provincial authorities

Date of stakeholder consultation	10-June-2025
Stakeholder engagement process	An information and discussion workshop of 1 day was organized by sWc Kongo and AMAR in Lisala, the capital of Mongala Province. During this workshop, the Project and its activities were presented to all relevant provincial authorities (Section 2.3.5). A presentation of the Project was given and screened in French. The workshop ended with a discussion session in French and Lingala.
Consultation outcome	Several recommendations were made during this meeting. These included: - Give priority to native tree species for plantations - Maintain local committees to manage the previous social clauses (renamed for the Project "Specific agreement"), but strengthen the supervision of the use of funds by sWc Kongo to prevent misuse of funds - Clarify the Project's collaboration with provincial authorities - Create a dedicated working framework for women, Indigenous peoples, and youth, ensuring equitable, inclusive, and non-discriminatory participation in local decision-making bodies - Recommend the use of local labor in all project activities
Stakeholder input	The comments have been taken into account and integrated into project management. In particular, the establishment of the LDF, managed by the CSMA-FPIC elected at the Groupement level, with enhanced supervision by sWc Kongo to ensure that funds are used appropriately and transparently. A clear channel of communication will be established with provincial authorities by the Chief of Site.

Table 23 - Stakeholder consultation with territorial authorities

Date of stakeholder consultation	16-June-2025
Stakeholder engagement process	An one-day information and discussion workshop was organized by sWc Kongo and AMAR in the territorial capital of Lisala. During this workshop, the Project and its activities were presented to all relevant territorial authorities (Section 2.3.5). A presentation of the Project was given and screened in French. The workshop ended with a long discussion session in French and Lingala.

Consultation outcome	Several recommendations were made during this meeting. These included: - Promote effective oversight of the management of the LDF for the benefit of communities.
Stakeholder input	The comments have been taken into account and integrated into project management (refer to explanations detailed above)

Table 24 - ESIA survey

Date of stakeholder consultation	1st to 8th December 2025
Date of stakeholder consultation	A household survey was conducted in a sample of nine villages. Four population groups were specifically targeted to ensure a diversity of perspectives: women, youth, community leaders (notables), and farmers and fishermen. In total, 2634 individuals were interviewed, including 662 women and 1972 men. In addition to the household surveys, semi-structured interviews were conducted with local authorities, including the Groupement Chief, the sector chief and the territorial administrator.
Consultation outcome	These surveys enabled the collection of socioeconomic data (such as the communities' main income sources) and helped identify community perceptions of both the positive and negative impacts of the Project. During the surveys, respondents also had the opportunity to propose mitigation measures.
Stakeholder input	In response to concerns raised during the surveys, the project implementation is paying particular attention to addressing participants' worries, including the risk of excluding minority groups, the potential for household violence, and the risk of misappropriation during the distribution of PES. Section 2.3.6 outlines the specific measures taken to mitigate these risks. Additionally, many participants highlighted the lack of tools and equipment for farming. In response, the project team has prioritized the distribution of agricultural tools to LDCs as part of the initial farming activities.

Table 25 - FPIC process

Date of stakeholder consultation	From June to 2025 to January 2026
Stakeholder engagement process	Awareness-raising sessions during community meetings in villages as part of FPIC process

Consultation outcome	The presentations and discussions surrounding the Project helped clarify certain elements and raise concerns and recommendations about the activities. The main points that emerged were: - Observation of the gradual decline in the availability of game in the forest and the need to take action; - Concern about Taranis Congo's failure to meet its commitments; - Ensuring respect for customary rights; - Priority given to local employment.
Stakeholder input	All concerns raised will be addressed with care and vigilance during the implementation of the Project's activities.

Table 26 - Creation or revitalization of LDCs

Date of stakeholder consultation	From October to 2025 to January 2026
Stakeholder engagement process	Election of 11 members in average in each village to form the LDCs
Consultation outcome	After awareness-raising by the NGO AMAR on the role of the LDCs and NRMPs, the extraordinary local general assembly of each community gave its consent to the establishment of the LDC. In the 76 participating villages[53], members of the LDC were elected from among the communities.

Table 27 - Development of NRMPs

Date of stakeholder consultation	From November 2025 to March 2026
NRMPs description and stakeholder engagement process	The NRMP is a planning document drawn up by each LDC and based on an assessment of future populations, current land use and the communities demand (Section 2.1.17.2). For each village, AMAR hold discussions with the LDC to map current boundaries of agricultural zones and forest, and define the NRMPs zones in accordance with neighboring villages. The CLDs were then consulted to determine the distribution of agricultural activities inside the current APZ and the extent of these zones over the next 10 years. Once the NRMP had been drafted by AMAR, the CLD met to amend if necessary, and then sign the 2026-2035 NRMPs. Thus, boundaries of APZ and protected areas were then defined in a

[53] No LDC was elected inside the village Sanga 1, due to an internal conflict within the village that is destabilizing governance

	participatory and inclusive manner between the Community and the Concessionaire through AMAR.
Consultation outcome	This key stage of the Project enables local communities to engage in collective reflection on the management of their territory and the planning of their activities. Through LDCs, communities had the opportunity to express their priorities and select the Project activities they wish to implement according to their specific needs and local context. The Project adopts a consultative and adaptive approach, ensuring that activities can be adjusted over time based on feedback from different community groups and other stakeholders, thereby strengthening ownership and sustainability of the interventions.
Stakeholder input	77 NRMPs were designed and validated by the LDCs at village level, shaping land management for the next 10 years. These plans define clear objectives for conservation areas and APZ with a detailed breakdown per activities (Section 2.1.17.2).

2.3.11 Continued Consultation and Adaptive Management (VCS, 3.18; CCB, G3.4)

The Project plans to establish a continuous communication and consultation plan to maintain transparent, inclusive, and constructive dialogue with all stakeholders throughout its implementation. Building on the participatory process initiated during the design phase, sWc Kongo will ensure that communities, local authorities, and other relevant actors are regularly informed and actively involved in decision-making related to Project activities and monitoring.

<u>Communication with communities</u>

As part of Project activities, regular consultation meetings will be organized at the village level. sWc Kongo field staff, including the Environmental and Social Governance (ESG) expert, social facilitator and agronomist, will work closely with the LDCs, which serve as the main communication channels, to ensure continuous implementation and monitoring of activities.

The signing of the FPIC was accompanied by the establishment of an FPIC Committee for the Supervision and Monitoring of the FPIC Agreement (CSMA-FPIC) and a Consultation and Conflict Resolution Committee (CCRC).

The CSMA-FPIC is composed of representatives of the local community, appointed by free election at a community meeting, as well as a representative of the REDD+ investment promoter. It is chaired by the Community Chief, who also chairs the biannual meetings. The CSMA-FPIC meets at least twice a year and holds an annual review meeting to assess the implementation of the Agreement and make recommendations to improve the implementation of the Project. The CSMA-FPIC is also responsible for defining priorities for public infrastructure construction or rehabilitation (schools and health centers) at the Groupement level.

Finally, throughout the Project, the role of the community facilitators is to improve communication between local communities and the Project. This enables them to answer residents' questions, listen to any concerns they may have, and speed up the implementation of solutions.

Communication with authorities

Territorial and provincial authorities will be informed yearly about the progress of the Project. Regular meetings will be organized to present the achievements.

Grievance system mechanism

A FGRM has been established to enable the effective, confidential, and secure receipt and management of grievances related to the activities of the Project. Please refer to Section 2.3.15.

Feedback and adaptive management

Comments and concerns expressed during consultations will be systematically recorded, analyzed, and integrated into Project management under an adaptive management approach. This process will ensure that stakeholder feedback and lessons learned are continuously considered to adjust activities, improve Project performance, and strengthen local ownership.

2.3.12 Stakeholder Consultation Channels (CCB, G3.5)

Due to the limited access to network and internet connectivity in the villages, the primary channel for consultation and information sharing remains the organization of in-person meetings within the communities. This approach has proven to be the most effective and culturally appropriate means of engagement and will be maintained throughout the life of the Project under the supervision of the ESG expert, with support from sWc Kongo staff.

Please refer to Sections 2.3.5 and 2.3.10, which details the set of stakeholder consultations organized (consultation with Provincial authorities, with territorial authorities and with communities).

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

The Project promotes inclusive and equitable values, ensuring the effective participation of all social groups, particularly women and youth.

As described in Section 4.5.8, community management is organized as follows: 77 villages first agreed to participate in the Project during the FPIC processes. LDCs[54] each composed of 11 delegates elected for 3 years, were then established in 76 villages[55]. In addition to these LDCs, at the Groupement level, five CSMA FPIC (one in each) were established. The CSMA FPIC is a committee responsible for verifying and ensuring compliance with the commitments of both the Project Proponent and the communities - whose members were also elected.

As previously mentioned, community assemblies were held directly in the villages at times compatible with local availability, to encourage the broadest possible participation.
sWc Kongo and the NGO AMAR ensured the active presence of women and youth during these consultation sessions. Discussions were conducted in both French and Lingala, using simple and pedagogical visual materials adapted to participants' levels of understanding and respectful of the local cultural context.

[54] *Rapport de mission portant sur l'appui à la structuration des communautés locales en Comités Locaux de Développement (CLD) dans les villages riverains des concessions de Conservation 04/24 de Lisala*, redacted by AMAR, october 2025
[55] Although the village of Sanga 1 had signed the FPIC, they are ultimately not part of the project due to internal conflicts within the village, which prevent the establishment of a stable LDC.

During the establishment of the LDCs, particular attention was paid to ensuring the representativeness of all social groups ; with at least 30% of women elected inside each LDC. AMAR made sure to include women, who are often underrepresented in local governance bodies despite their essential role in agricultural and economic activities. Their participation in the LDCs guarantees that their voices are now recognized in the Project's decision-making process.

Table 28 - Community participation in FPIC meeting and designation of community delegates in villages

	Meeting 1		Meeting 2		Meeting 3	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**
Number of participants	2562	623	2804	882	3267	906
Total	3 185		3 686		4 173	

Table 29 - Community participation in FPIC signing meeting, AMFC and CCRF at the administrative groupement headquarters

	Meeting 1		Meeting 2	
	Men	**Women**	**Men**	**Women**
Number of participants	183	7	185	7
Total	190		192	

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

The Project applies a zero-tolerance policy toward any form of discrimination or harassment, whether based on gender, race, religion, sexual orientation, or any other personal characteristic. As part of the *sWc Way of Doing Business Framework*[56], sWc Kongo employees are bound by a Code of Conduct[57], which clearly condemn discrimination and any form of violence. All staff are trained in professional ethics, equal treatment, and respect for human rights.

A Feedback and Redress Grievance Mechanism is available to all SWC stakeholders and allows any stakeholders to voice a concern either for him or for someone else, regarding discrimination (Section 2.3.15). SWC will put in place measures to prevent any act of harassment (moral, sexual, etc.) and will take immediate steps to put a stop to harassment as soon as it is informed of such incidents.
Regular awareness and training sessions are conducted to prevent discrimination and harassment risks and to promote a respectful, inclusive, and equitable working and engagement environment for all participants in the Project.

2.3.15 Feedback and Grievance Redress Procedure (VCS, 3.18.4; CCB, G3.8)

[56] Environmental, Social & Governance Management System, The Shared Wood Company, January 2025
[57] Code de conduite, The Shared Wood Company, 2023

Table 30 - FGRM

Development process	The FGRM of the Lisala Project was developed by sWc and implemented locally by SWC Kongo, based on SWC's corporate policy on grievance management. As part of the *sWc Way of Doing Business Framework*, the FGRM follows international best practices, including guidelines from the International Labour Organization (ILO) and the World Bank Environmental and Social Standards (notably ESS2 and ESS4). The FGRM is a locally based, formalized way to accept, assess, and resolve stakeholders feedback or complaints. The development of the procedure was guided by four key principles: accessibility, transparency, impartiality, and confidentiality/anonymity. It was designed to ensure that all stakeholders - particularly local communities, workers, and local authorities - can safely and effectively raise concerns. The mechanism was designed in collaboration with the SWC Kongo ESG expert to provide an effective, confidential, and secure system for receiving and managing grievances related to project activities. The process had to integrate culturally appropriate conflict resolution methods by involving local representative structures, such as LDCs. These bodies serve as trusted intermediaries, allowing grievances to be raised in locally appropriate ways, including oral communication and community-based mediation. The FGRM was designed to address two main types of grievance: (i) grievances between communities within the PZ and the Project Proponent (sWc Kongo/Taranis Congo), and (ii) concerns related to worker rights, working conditions, and occupational health and safety raised by employees or contractors. The development process resulted in a structured system defining how grievances are: - received through multiple accessible channels (oral, written, anonymous or identified); - reviewed and assessed through a centralized and impartial body (Ethics Committee); - responded to within defined timeframes (target of 10 working days after admissibility); - resolved through dialogue, incorporating customary conflict resolution practices where appropriate. The mechanism allows grievances to be submitted orally or in writing, anonymously or with identification, ensuring that all stakeholders can raise concerns safely and without fear of retaliation.
Grievance redress procedure	The grievance redress procedure developed with stakeholders establishes a clear, accessible, and time-bound process for handling grievances, while ensuring consistency with local conflict resolution practices. The grievance handling process is the following: Submission : Grievances can be submitted orally or in writing, anonymously or with identification, through multiple entry points including SWCK staff, community

	representatives (CLDs and CCRCs, established during the FPIC process), suggestion boxes, phone lines, and email channels. Assessment: All grievances are registered and transmitted by the Grievance Management Unit to the Ethics Committee, composed of the SwC two co-founders and ESG manager. The Ethics Committee is responsible for impartial review, analysis and follow-up and assesses each grievance and proposes appropriate resolution measures within a reasonable timeframe. Response and resolution : A resolution proposal is communicated within 10 working days after admissibility (unless further investigation is required). The proposal is discussed with the complainant to reach agreement and is formalized in a resolution plan with an implementation timeline. This process ensures timely handling of grievances and allows for the involvement of community-based structures where relevant. The procedure follows a three-stage process with defined and reasonable timeframes: 1. Attempt at resolution: Initial review and dialogue aimed at reaching an amicable solution, involving the Ethics Committee, the Grievance Management Unit, and relevant local structures. 2. Mediation: If no agreement is reached, mediation is conducted with the involvement of community representatives, notably the CCRC, in line with traditional and community-based conflict resolution practices. 3. Arbitration or courts: If mediation fails, complainants retain the right to pursue resolution through arbitration mechanisms or the formal judicial system, in accordance with national legislation. Training sessions are conducted for project staff to ensure a consistent understanding and application of the FGRM, and information materials describing grievance submission and handling procedures are displayed at all project sites to ensure transparency and accessibility.
Special procedure for GBV, sexual exploitation and abuse, and sexual harassment	A specific and reinforced procedure is in place for handling grievances related to GBV, including sexual exploitation and abuse and sexual harassment, recognizing these as serious and sensitive grievances requiring immediate and careful attention. All such cases are reported directly to the Ethics Committee and treated with the highest level of confidentiality and urgency. To ensure accessibility and trust, a trained female focal point is designated within SWCK in Lisala to receive GBV-related complaints, particularly to encourage women to report incidents safely. These cases are managed under a survivor-centered approach, ensuring that affected individuals are treated with dignity, respect, and autonomy throughout the process. Key principles guiding the management of GBV cases include: - Ensuring the physical, emotional, and psychological safety of the survivor; - Strict confidentiality, with information shared only on a need-to-know basis;

- Respect for the survivor's autonomy, including their right to make decisions regarding the handling of their case;
- Careful and confidential communication, minimizing risks of retaliation or further harm; and
- Respect for anonymity, where requested.

This dedicated procedure ensures that GBV-related grievances are handled in a secure, ethical, and victim-sensitive manner, in line with international good practices.

2.3.16 Accessibility of the Feedback and Grievance Redress Procedure (VCS, 3.19; CCB, G3.8)

The grievance redress procedure is designed to be accessible, transparent and inclusive for all affected stakeholders, including local communities, project employees and other relevant parties. Grievances can be submitted without any specific format, either orally or in writing (SMS, email, telephone or direct verbal communication), and may be anonymous or identified. Complaints may be submitted in the complainant's official language, with correspondence handled in the same language whenever possible.

The procedure is publicized through information materials displayed at project sites, which explain how grievances can be submitted and processed. In addition, annual training sessions for project staff contribute to ensuring consistent communication and awareness of the mechanism. Regular consultations with villages are conducted to assess stakeholders' awareness of the mechanism and its accessibility, thanks to the presence of a social facilitator. Since January 2026, posters introducing the FGRM are displayed in all villages so that everyone can access them and learn about the mechanisms

for submitting complaints. The posters are available in French and Lingala and include pictograms facilitate understanding and make them accessible to everyone, including those with reading difficulties (see Figure 17).

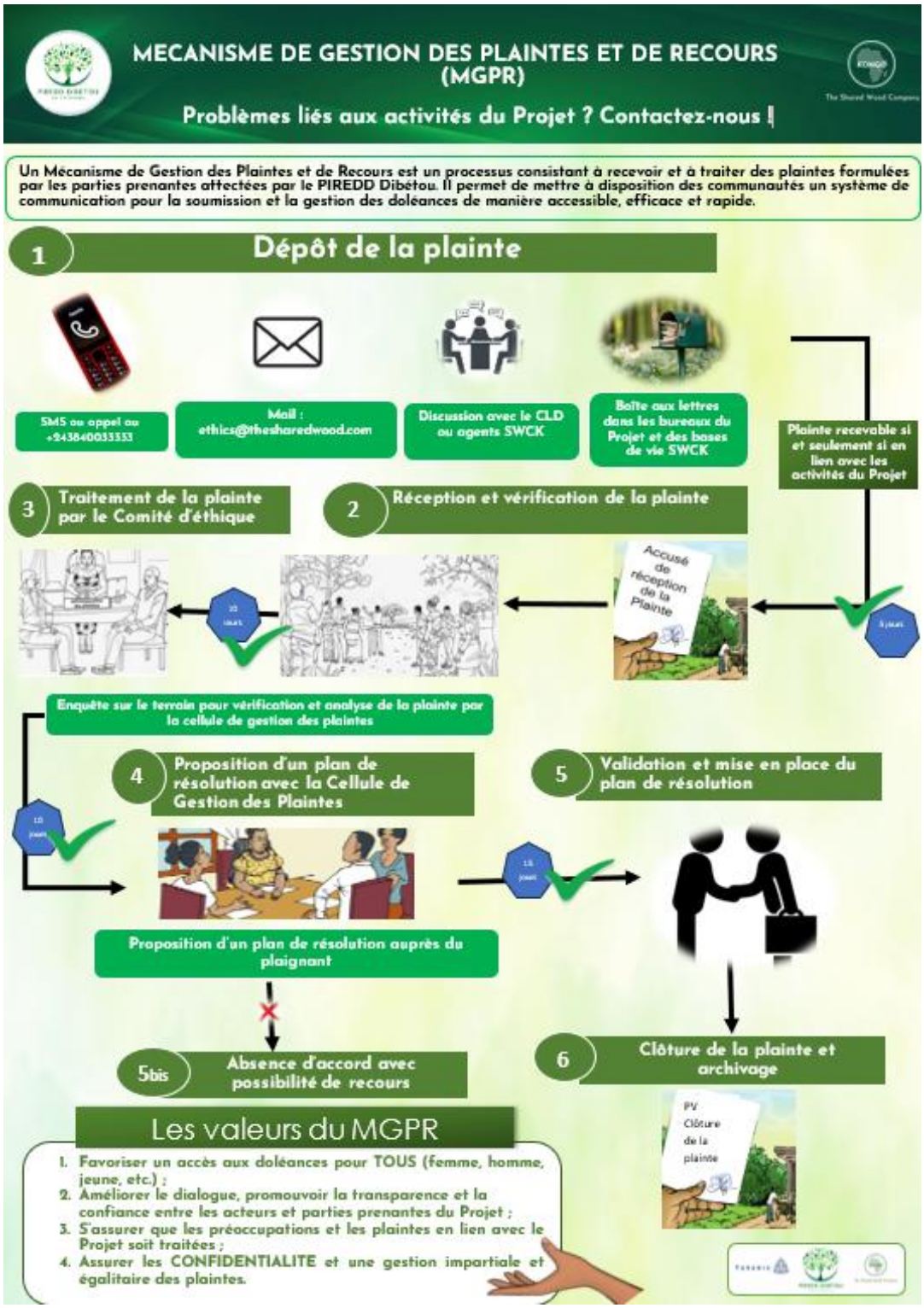


Figure 19 - FGRM poster displayed in every villages

All grievances, whether formal or informal, admissible or inadmissible, are systematically recorded in a centralized grievance registry managed by the Grievance Management Unit. This registry documents the status of each grievance (received, under review, resolved, unresolved or closed), the actions taken, and

the outcomes. Complainants are formally informed of decisions, resolution measures and closure of their grievances.

Information on grievances and project responses is consolidated through internal quarterly reports submitted to the Ethics Committee, as well as through an annual ESG report prepared by the Project.

This annual report includes a summary of grievances received during the year and their status, thereby ensuring transparency and public availability of aggregated information on the functioning and performance of the grievance mechanism. This document will be sent to the MEDD.

2.3.17 Worker Training (VCS, 3.19; CCB, G3.9)

The Project provides training for all employees involved in Project activities and members of local communities participating in its implementation. The main objective is to develop skills and knowledge that are directly useful at the local level, thereby strengthening community participation and ownership of activities. Throughout the Project, training sessions will be organized to ensure the smooth running of activities, reduce health and safety risks and guarantee compliance with project standards. Training will be provided periodically and accompanied by visual aids and detailed guides, thus ensuring the retention and transfer of the skills acquired.

The table below presents examples of trainings already conducted or planned.

Table 31 - Training for employees, service providers and communities

Formation	Objectives	Persons concerned
sWc Way of Doing Business Framework including sWc Code of Conduct[58] and sWc ESGMS[59]	The objective of this training is to ensure that all project staff fully understand and adhere to the Project's core values, ethical standards, and rules of conduct. It aims to promote a culture of integrity, respect, and accountability within all Project activities. The training also seeks to prevent any inappropriate behavior by sWc Kongo staff and ensure that everyone represents the project's principles in their interactions with local communities and partners.	Staff and service providers
Safety rules (PPE, traffic, etc.), waste management, and emergency procedures	During the impact assessment[60], several occupational health and safety risks, including those related to waste management, were identified. In response, a set of safety procedures has been developed to prevent accidents and protect the health of workers as well as external stakeholders. Training sessions will be organized to ensure that all staff are familiar with these safety and waste management procedures and can apply them effectively in their daily work. In addition, reminder posters will be displayed at the project site to reinforce awareness and compliance with safety standards.	sWc Kongo employees and service providers
Project management	The Project organizes training sessions for staff responsible for financial and operational management to ensure transparency, accuracy, and compliance with internal procedures. These measures ensure professional and transparent management of	sWc Kongo employees (chief of site, operation director, CFO)

[58] Code of conduct, The Shared Wood Company, 2023
[59] Environmental, Social & Governance Management System, January 2025
[60] ESIA conducted by The Shared Wood Company, 2026

	Project resources while strengthening local capacities and promoting active staff participation in Project implementation.	
Operation of LDCs and regulations	During the establishment of the LDCs, specific training sessions were organized for all members. These sessions aimed to strengthen understanding of their respective roles, responsibilities, and the overall functioning of the committees.	Communities and LDC members
Methodology for NRMP planning	As part of the participatory development of NRMPs, members of the LDCs and community representatives received targeted training sessions conducted by the NGO AMAR. This approach promotes community ownership of the plans and ensures that local knowledge is integrated into decision-making.	Communities and LDC members
FGRM	Specific training sessions on the FGRM will be organized for sWc Kongo employees, members of the CCRC, and representatives of the LDCs. These sessions aim to ensure that all active participants fully understand the objectives, procedures, and ethical principles of the FGRM, and are able to respond appropriately and confidentially when a complaint is received (2.3.15)	Employees, members of LDCs and members of CCRC
Management of GBV	Awareness-raising workshops and training sessions for all project staff on GBV, non-discrimination and child labour will be organised. This approach ensures especially that gender-sensitive mechanisms are in place, promoting inclusiveness, respect, and the protection of all stakeholders within the PZ.	Employees
Promoting more sustainable fishing and hunting practices	The Project plans to collaborate with local NGOs to organize information and training sessions aimed at promoting more sustainable fishing and hunting practices. These sessions will focus on raising awareness among community members about resource management, ecosystem preservation, and compliance with local and national regulations.	Communities
Agricultural activities	Throughout the Project, experts and agronomists will support farmers in implementing agricultural activities. They will provide ongoing training on the adoption of sustainable farming techniques such as agroforestry, biological pest control, and the use of improved crop varieties. These capacity-building activities aim to strengthen local knowledge and promote environmentally responsible agricultural practices that enhance productivity while preserving soil fertility and biodiversity in the long term.	Communities and LDC members
Disease prevention (HIV, Ebola) and family planning	The Project plans to collaborate with local NGOs to organize training sessions on the prevention of diseases, including HIV, Ebola, and Mpox, as well as on family planning. These sessions aim to raise awareness within the communities about health risks, preventive measures, and informed choices regarding health and family planning.	Communities
Educational posters	To support community engagement, bilingual educational posters (French-Lingala) have been elaborated, covering critical topics ranging from climate change fundamentals and REDD+ validation processes to explanations of key mechanisms like PES, FPIC protocols, NRMP, along with agroforestry principles, the ecological value of trees, and a comprehensive overview of the PIREDD Dibétou initiative's objectives and framework.	Communities
Monitoring	The Project will also organize training sessions on monitoring Project indicators. In particular, for biodiversity monitoring, employees will receive training on identifying wildlife presence indices and implementing established monitoring protocols.	sWk employees

Through these training courses, community members and Project employees will acquire practical knowledge and skills to ensure the smooth running of the Project, promote community well-being and make informed decisions, thereby contributing to the overall resilience and sustainability of the Project. It can be estimated that at least 20% of the adult population living in the PZ (around 7 460 community members, 30% are women) is expected to have improved skills or knowledge in the next 5 years, as a result of training provided as part of the project activities.

2.3.18 Community Employment Opportunities (VCS, 3.19.13; CCB, G3.10)

The Project ensures that all members of the local communities will have an equal opportunity to access available positions and Project activities, provided they meet the required skills and qualifications. The Project also actively encourages women to apply for its positions.
In the recruitment and assignment of positions, the Project applies the following principles:

- Transparency and publicity of positions: job offers have been posted at local ONEM offices[61] to ensure broad dissemination.
- Selection based on skills and qualifications: candidates are evaluated according to objective criteria related to their professional experience. Selected candidates then complete an aptitude test.
- Promotion of equity and gender equality: every job announcement strongly encourages women to apply, and the Project prioritizes their recruitment when conditions are met.
- Equal pay: salaries are equitable for equivalent work, regardless of gender or social status.

Currently, the Project enables the recruitment of full-time (FTE) staff for sWc Kongo (29 in Lisala, 7 in Kinshasa) ; many of whom are from Mongala Province, allowing them to develop their skills in a variety of roles (agronomists, community facilitators, eco-guards..). Particular attention is paid to recruiting women for the sWc Kongo team, although at present only two women hold full-time positions within the Project.

Furthermore, all community members can participate in project activities voluntarily. Even if they are not directly employed, they can receive PES. The inclusion of women in these activities and equal distribution of PES is also prioritized to ensure fair and sustainable participation. These PES schemes most commonly take the form of payments for agricultural services, but not exclusively: certain activities planned as part of the Project, such as road repairs or the establishment of transects for biodiversity monitoring, will result in PES payments for volunteer villagers.

2.3.19 Occupational Safety Assessment (VCS, 3.19; CCB, G3.12)

During the impact assessment[62], a detailed analysis of project activities, associated tasks, and field conditions was conducted to identify the main risks to which workers may be exposed. These include risks related to fieldwork (e.g., use of tools and machinery, difficult terrain, and transportation), as well as risks associated with waste management, fire prevention, circulation rules and potential health hazards.

To address these risks, specific Health, Safety, and Environmental (HSE) procedures have been developed[63]. Workers will receive training sessions on occupational safety, including the correct use of equipment, waste handling, and emergency response. Protective equipment will be provided to staff whose tasks require it, and compliance with safety standards will be monitored regularly by the Project's ESG expert and site supervisors.

[61] public institution responsible for employment services
[62] ESIA conducted by The Shared Wood Company, 2026
[63] Refer to the ESIA conducted by The Shared Wood Company, 2026

Furthermore, information sessions and visual materials (posters and safety guidelines) will be displayed at the Project site to ensure workers are constantly reminded of best practices. In addition, all sites will be equipped with first aid supplies, emergency communication equipment (satellite phone), and fire protection equipment.

These measures aim to minimize exposure to hazards, reduce the likelihood of accidents, and protect the health and well-being of all workers throughout project implementation.

Below are the main risks identified:

Table 32 - Activities, risks and mitigation measures

Activities	Risks	Mitigation measures
Storage and management of toxic products and waste (oil, gas, ...)	- Leakage - Water and soil contamination - Fire - Respiratory disease and allergy	- Personal Protective Equipment (PPE) - Training of sWc Kongo agents - Monitoring of storage areas by an agent - Maintenance of storage equipment and verification - Safety and firefighting procedures
Vehicle traffic (pick-ups, motorbikes, boats...)	- Road accidents or drowning - Noise pollution - Air pollution	- Rules of conduct - Training for experienced drivers - Vehicle maintenance and monitoring - PPE
Forest work	- Stings and bites - Falling trees or branches - Getting lost	- PPE - Emergency communication and evacuation procedure - GPS and satellite phone
Setting up activities in the villages	- Accidents/injuries - Conflict - VGB - Vandalism	- PPE - Emergency communication and evacuation procedure - FGRM - Security agents hired on sites

2.4 Management Capacity

2.4.1 Project Governance Structures (CCB, G4.1)

The governance structure of the Project is organized at four levels:

1. The sWc headquarters in Paris oversees the strategic supervision and overall management of the Project. It is responsible for the carbon and CCB certification processes, budgetary planning, and financial oversight. sWc provides technical support to the team in the DRC when required.
2. The sWc Kongo headquarters in Kinshasa coordinates administrative and operational activities at the national level (Kinshasa, Lukolela and Lisala). The team is responsible for day-to-day management, coordination with institutional partners, and implementation of the strategic orientations defined by the headquarters.

3. The technical team, supervises operational implementation across the Project's intervention areas. This team brings together the technical director and technical experts (GIS, Forestry & Biodiversity, Agroforestry development and value chain management, ESG & monitoring and evaluation, Infrastructure & Public works) responsible for the planning, supervision, and assessment of all activities and Project impacts.
4.The operational team, based on-site in Lisala, is in charge of operational and logistical operations in the PZ, and work directly with local communities to implement project activities (plantations, awareness campaigns, ecological and social monitoring, etc.) in line with the technical guidelines approved by sWc Kongo's headquarters.

2.4.2 Required Technical Skills (VCS, 3.19; CCB, G4.2)

The implementation of the Lisala REDD+ Project requires a combination of complementary technical and social skills, provided by specialized experts and trained local teams. These skills are essential to ensure the effective execution of project activities, robust environmental and social monitoring, accurate carbon estimation, and meaningful community participation.

1. **Community engagement and local development**

The success of the Project relies on the active participation of local communities. Key competencies include:

- Social facilitation and community mediation to maintain a continuous and transparent dialogue between the Project and local stakeholders.

- Participatory facilitation and conflict management to promote inclusive local governance through LDCs.

These skills are ensured by the social facilitator, senior agronomist, and the ESG Expert.

2. Biodiversity and forest cover assessment and monitoring

Ecological monitoring is a cornerstone of the Project. The skills mobilized include:

- Botany and forest ecology, for the identification and mapping of plant species and sensitive habitats.

- Wildlife monitoring, through species tracking, presence indicators, and standardized survey protocols.

- GIS and GPS technologies, for the collection, management, and spatial analysis of environmental data.

These areas of expertise are covered by eco-guards/ botanists, and the GIS/Forestry/Biodiversity Expert of sWc Kongo, who oversees the monitoring of biodiversity-related activities and indicators.

3. **Carbon measurement and monitoring**

Carbon quantification activities require specific technical skills to ensure accurate estimations and compliance with Verified Carbon Standard (VCS) methodologies. Key competencies include:

- Measurement of forest carbon stocks through the establishment and monitoring of permanent inventory plots.

- Use of remote sensing and satellite imagery for monitoring deforestation and forest regeneration.

- Analysis and processing of forest data for the calculation of avoided and sequestered emissions.

These competencies are provided by the GIS/Forestry/Biodiversity Expert based in Lisala, in coordination with sWc's supervisory teams.

4. Agroforestry development and value chain management

Supporting communities in the development of agroforestry systems and sustainable value chains requires strong technical expertise in:

- Technical itineraries for sustainable and innovative agricultural practices.
- In-depth knowledge of local agricultural value chains, including processing, certification, and market access mechanisms.

These skills are provided by the Senior Agronomist, supported by the Agroforestry and Value Chain Expert, and the Technical Director.

5. Technical and operational management

To ensure overall project coherence and compliance with national and international standards:

- The Operations Director and Administrative and Financial Director coordinate and plan operations, human and financial resource management.
- The Technical Director supervises planning and field activity monitoring.
- The GIS/Forestry/Biodiversity Expert oversees the monitoring of biodiversity-related activities and indicators.
- The Public Works Expert oversees infrastructure management.
- The ESG Expert ensures compliance with World bank environmental and social safeguard standards.

In the case of one-off activities such as training on sustainable fishing practices or disease prevention, external expertise will be mobilized through collaboration with local NGOs. Similarly, partnerships may be formed with local universities to carry out more specific studies on certain topics such as biodiversity.

In summary, the Project mobilizes a multidisciplinary team whose expertise spans community development, biodiversity conservation, carbon monitoring, agronomy, and sustainable land management. This integrated approach ensures that the Project has the necessary skills to achieve its objectives.

2.4.3 Management Team Experience (VCS, 3.19; CCB, G4.2)

The Project is implemented by a multidisciplinary management team combining extensive experience in sustainable land management, REDD+ implementation, carbon finance, forestry operations, rural development, and large-scale program management in Africa, particularly in DRC.

Table 33 - The management experience of the Lisala REDD+ Project team.

Role	Experience

President and co-founder of SWC and MRV (Monitoring, Reporting, Verification) expert	Over 30 years of experience in sustainable forest management and nearly two decades in carbon finance and nature-based climate solutions. Former senior forestry and carbon finance specialist supporting countries' access to international carbon funds (BioCF, FCPF). Extensive experience in development and implementation of land-use and REDD+ programs in Africa, including involvement in the PIREDD Maï-Ndombe. Experience spans public and private sectors, including emission trading, biomass energy sourcing, and development of large-scale carbon and land management projects.
Operations Director	Expert in land use planning and sustainable forestry, with over 18 years of experience in the forestry sector, he has specialized in forest management planning and sustainable timber harvesting. He began his career as a forest management brigade leader, operating in the provinces of Maï-Ndombe and Équateur. For over ten years, he has been working in the forest concession covered by the Project, where he has developed a deep understanding of the ecological, social, and technical challenges specific to these forests. His extensive experience gives him strong operational knowledge of local dynamics and the complexities of sustainable forest management.
Administrative and Financial Director	Experienced administration and finance manager in the carbon and private sectors in DRC. Former finance manager of the first agroforestry carbon project in Africa registered under the CDM, with strong expertise in financial management, regulatory compliance, and operations in remote environments. Extensive experience managing multicultural teams and ensuring financial and operational performance of large field projects.
Technical Director	Agronomist with more than 13 years of experience in sustainable forest management, biodiversity conservation, and rural development in the DRC. Direct involvement in implementation of large REDD+ and PIREDD programs, including natural resource management, land-use planning, and community-based development projects. Strong operational experience in agroforestry and community engagement supporting REDD+ implementation.
GIS / Forestry / Biodiversity Expert	Specialist in GIS and environmental monitoring with experience supporting major REDD+ and climate resilience programs in DRC. Expertise includes MRV systems, forest and land-use inventories, spatial data analysis, and mapping for land management and carbon monitoring. Combines technical remote sensing expertise with strong field experience in forest landscapes.
ESG Expert	The ESG Expert brings several years of experience in environmental and social safeguards and in monitoring and evaluation of large-scale development and natural resource management projects. He received advanced training on World Bank Environmental and Social Safeguard Policies and has since applied these standards across multiple projects. He also has strong field-based knowledge of the PZ, including local socio-economic conditions, community dynamics, forest ecosystem pressures, and land tenure issues, gained through direct involvement in REDD+ and forest governance initiatives in Lisala.
Lisala Site Manager	Agronomist who graduated from the Faculty of Agronomic Sciences in Lubumbashi. He has over 13 years of experience in sustainable forest management, biodiversity conservation, and rural development. He possesses recognized hands-on expertise in the development and implementation of REDD+ projects, particularly in the DRC. He began his career as a program officer with the NGO PREMI CONGO (Protection of the Miombo Ecoregions). He then served as a project manager and expert in natural resource management and rural development in several major initiatives, including the PIREDD

	Plateaux, implemented by WWF, and the PIREDD Orientale, led by the United Nations Development Programme (UNDP).
Forestry and Value Chain Expert and a Public Works Expert	The Project also plans to recruit a Forestry and Value Chain Expert and a Public Works Expert. These specialists will support the launch of agroforestry and infrastructure rehabilitation activities. Particular attention will be given to selecting highly qualified and experienced professionals with proven expertise in similar contexts, ensuring the technical quality and sustainability of project interventions.

2.4.4 Project Management Partnerships and Team Development (VCS, 3.19; CCB, G4.2)

To complement the Project management team's internal capacities, ONF International (ONFi), has been mandated to provide technical support across all key carbon-related components of the Project, including baseline development, scenario definition, carbon accounting, and alignment with VCS and CCB methodological requirements. This partnership ensures that the Project benefits from internationally recognized expertise in forest carbon project design and implementation, and strengthens the technical robustness and credibility of the project's carbon framework throughout its development and validation phases.

Moreover, at a local level, to strengthen the project's technical and community engagement capacities, strategic partnerships have been established with experienced local organizations involved in similar REDD+ and conservation initiatives across DRC.

For the FPIC process, the training of LDC, and the development of NRMP, the Project partnered with AMAR, an NGO with extensive experience in community consultation and participatory planning in REDD+ projects nationwide. Having previously worked within the Concession, AMAR is familiar with the local context and communities. During its mission, the Project's social facilitator received field training and mentoring, thereby enhancing their skills for future implementation.

Additionally, the Project plans to collaborate with other local NGOs (Section 2.3.2). For instance, GASHE brings valuable expertise in sustainable hunting and fishing practices. The Project also aims to establish partnerships with organizations specialized in women's rights and to seek scientific and technical support from local universities.

This partnership-based approach ensures that any potential gaps in the management team's expertise are effectively addressed through collaboration, capacity building, and knowledge transfer.

2.4.5 Financial Health of Implementing Organization(s) (CCB, G4.3)

The implementing organization (sWc Kongo) is responsible for the day-to-day implementation of Project activities under a multi-year agreement with the Project Proponent, covering all operational costs required for sWc Kongo to carry out field implementation and monitoring activities.
While sWc Kongo serves as the implementing entity, Taranis Operations Limited acts as the financial backer of the Project and is committed to covering all project implementation costs throughout the project lifetime. Please refer to Section 2.1.22.

2.4.6 Avoidance of Corruption and Other Unethical Behavior (VCS, 3.19; CCB, G4.3)

The Project Proponent, Taranis Operations Limited, and the Implementing Partner, sWc Kongo, adhere to the highest standards of integrity, transparency, and good governance throughout project implementation.

The Project applies a zero-tolerance policy toward any form of corruption. As part of the *SWC Way of Doing Business Framework*[64], sWc Kongo employees are bound by the sWc Anti-Money Laundering and Counter Financing of Terrorism (AML-CFT) policy[65], which apply across all subsidiaries and operations and are implemented locally.

The Project applies this AML-CFT policy, aligned with applicable Congolese legislation and internationally recognized standards (e.g. OECD and World Bank guidelines). At the company level, these policies aim to prevent and mitigate risks of illicit activities both prior to investment - through due diligence, partner screening, and risk assessment - and during project implementation through ongoing monitoring and internal control procedures.

Staff involved in financial and operational management receive regular training on anti-corruption and AML-CFT requirements to ensure transparency, accuracy, and compliance with internal procedures. In addition, a Code of Conduct [66] ensures transparent and competitive recruitment and procurement processes based on objective and documented criteria. Any conflict of interest must be disclosed and is managed in accordance with internal policies.

The FGRM (Section 2.3.15) is in place to allow employees, stakeholders, and community members to report any suspected misconduct, unethical behavior, or non-compliance confidentially and without retaliation.

Together, these measures ensure that the Project Proponent and all partners operate with full integrity, accountability, and independence, free from any form of corruption, nepotism, or collusion in the design and implementation of the Project.

2.4.7 Commercially Sensitive Information (VCS, 3.5.2 – 3.5.4; CCB Rules, 3.5.13 – 3.5.14)

The following elements, relating to commercially sensitive information, have been excluded from the public version of the project description:

Table 34 - Commercially Sensitive Information

Section	Information	Justification
2.1.1	sWc Way of Doing Business Framework (including sWc Code of conduct and sWc Environmental, Social & Governance Management System)	Protection of the best interests of the company
2.1.19	Framework Agreement between the Ministry of Environment and Sustainable Development of the DRC	Protection of the best interests of the company

[64] Environmental, Social & Governance Management System, The Shared Wood Company, January 2025
[65] sWc AML-FT and anti-bribery Policy, The Shared Wood Company, 2023
[66] Code de conduite, The Shared Wood Company, 2023

2.1.19	Due Diligence document	Protection of the best interests of the company
2.1.22	Lisala REDD+ Project – Financial Sustainability	Protection of the best interests of the company
2.2.2	Plan d'aménagement concession No.036/11-Lisala, 2021	Protection of the best interests of the company
2.2.2	SOFORMA (2008). Rapport socio-économique sur Lisala	Protection of the best interests of the company
2.3.6	ESIA Document	Protection of the best interests of the company
2.5.7	FPIC, LDCs and NRMPs documents	Protection of the best interests of the company

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, G5.6)

The DRC has been committed to and has supported the REDD+ process since 2008, as evidenced by its early selection in the Forest Investment Program (FIP). The FIP is part of the national REDD+ process and serves as the primary source of funding to enable the country to enter an investment phase, undertake the large-scale operational deployment of REDD+, and launch the first sectoral transformation program in 2015.

In 2012, the government adopted a national REDD+ strategy [67], which outlines how it can meet its long-term development aspirations through a green economy. This strategy aims to stabilize forest cover across two-thirds of the country's area by 2030 and maintain it thereafter. More recently, the government has developed a large-scale REDD+ program for results-based payments in the Mai Ndombe province, with the goal of having a significant impact on the climate and delivering crucial development benefits, while generating unprecedented learning for the FCPF Carbon Fund.

The Project is aligned with the ambitious goals of the FIP and draws inspiration from the actions implemented in Mai Ndombe aimed at establishing a green development program.

Finally, the Project is aligned with the 2026 Forest Policy 2025-2035[68] regarding forest management, implementation of environmental and social safeguards, forest restauration, sustainable management and enhancing forest resources, conservation and enhancing biodiversity, strategic objectives.

Throughout the Project period, *Taranis Operations Limited* (Project proponent), *Taranis Congo* (Concession owner) and *The Shared Wood Company Kongo (Project operator)* will ensure that the Project and an all the activities are carried out in accordance with national and international regulations. The Project complies with all applicable local, district, and national laws, regulations, and standards. Within the PZ, none of the proposed project activities violates any law.

Table 35 - National and Local Laws

Sector	Laws and legal text	Project compliance

[67] « Stratégie-cadre Nationale REDD+, Résumé pour Décideurs», MEDD, 2012.
[68] « Politique Forestière Nationale 2025 – 2035 » MEDD 2026

Local governance	Legal text: - Law No. 08/012 of July 31, 2008, on fundamental principles relating to the free administration of the provinces; Regulatory text: - Ministerial Decree No. 034/CAB/MIN/ECNEF/2006 of October 2, 2006, on the composition, organization, and functioning of Provincial Forest Advisory Councils	The Project learned about the structure of local governance and presented its future activities to provincial authorities.
Concession right	Legal text : • Law No. 011/2002, of 29 August 2002, sets forth the rules applicable to the conservation, exploitation and development of forestry resources in all national territory (Forestry Code). - Law No. 73-021 of July 20, 1973, on the general regime governing property, land and real estate, and the regime governing securities, as amended and supplemented by Law No. 80-008 of July 18, 1980. Regulatory text : - Decree No. 011/27 of May 20, 2011, establishing specific rules for the allocation of conservation forest concessions; - Decree No. 14/018 of August 2, 2014, establishing the terms and conditions for the allocation of forest concessions to local communities; - Decree No. 09/08, of 8 April 2008 setting out the procedure for the award of exploitation, conservation and other concessions amended by Decree No. 011/25 of May 20, 2011; - Ministerial Order No. 008/CAB/MIN/ECN-T/2008 and No. 082/CAB/MIN/FINANCES/2008 setting the rates of duties, taxes, and fees to be levied on forestry activities at the initiative of the Ministry of the Environment, Nature Conservation, and Tourism; • Ministerial Order No. 022/CAB/MIN/ECN-T/15/Jeb/2008, of 7 August 2008, as amended by Ministerial Order No. 083/CAB/MIN/ECN-T/11/BNME/2013, of 30 September 2013, setting out the procedure of authorization for the transfer, lease, assignment and donation of forestry concessions (Ministerial Order 022/CAB/MIN/ECN-T/15/Jeb/2008).	Taranis Congo has obtained the rights to conservation concession No. 04/24 in accordance with the legal procedure for the transfer of conservation rights and the signing of the conservation Concession Contract with the DRC government. In addition, Taranis Congo undertakes to pay all taxes related to the Concession.

REDD+ and environmental project in DRC	Legal text : - Law No. 011/2002, of 29 August 2002, sets forth the rules applicable to the conservation, exploitation and development of forestry resources in all national territory (Forestry Code). - Law No. 11/009 of July 9, 2011, on fundamental principles relating to environmental protection, modified and completed by the Ordinance-Law No.23/007 of March 3, 2023; - Law No. 14/003 of February 11, 2014, on nature conservation modified and completed by the Law No.24/020 of December 30, 2024. Regulatory text : - Ministerial Order No° 026/CAB/MIN/EDD/AAN/KTT/04/2017 of November 8, 2017, establishing the guidelines framework for FPIC for the REDD+ implementation in the DRC. - Decree No. 14/019 of August 2, 2014, establishing the rules for the operation of procedural mechanisms for environmental protection; - Decree No. 13/015 of 29 May 2013 regulating classified installations," which in its Article 11, paragraph 2, makes the issuance of any license to operate a classified installation conditional on the prior completion of an ESIA, in accordance with Article 21 of "Law No. 11/009 of 9 July 2011 laying down the fundamental principles relating to environmental protection; - Decree 09/40 of November 26, 2009, on the creation, composition, and organization of the structure for implementing the process of reducing emissions from deforestation and forest degradation, abbreviated as “REDD”; - Ministerial Order No. 047/CAB/MIN/EDD/AA/MML/05/2018, of 9 May 2018 on the homologation process of the REDD+ investments (REDD+ Homologation Regulations); - Interministerial Decree No. 006/CAB/MINETAT-MIN/EDD/EBM/TSB/02/2023 and No. 120/CAB/MIN. FINANCES/2023 of September 15, 2023, establishing the distribution of the State's share of the profits from the sale of carbon credits; - Ministerial Decree number 043/CAB/MIN/ECN-EF/2006 of December 8, 2006 bearing provisions related to environmental and social assessment obligations of projects in the DRC;	Taranis Congo and sWc Kongo, acting on behalf of Taranis Operations Limited, will ensure that the project complies with the legal framework for REDD+ projects in the DRC. The Project will be subject to the homologation process and the necessary studies will be carried out, including the approval and implementation of REDD+ projects with the obtention of the “**FPIC**” of local communities and an ESIA, which will be validated by the Congolese environmental agency in order to obtain environmental certification. In addition, the terms for distributing the State's share of the proceeds from the sale of carbon credits were set out in the collaboration agreement signed between Taranis Congo and the DRC in accordance with Interministerial Decree No. 006/CAB/MINETAT-MIN/EDD/EBM/TSB/02/2023 and No. 120/CAB/MIN. FINANCES/2023 of September 15, 2023.

	- Ministerial Decree number 044/CAB/MIN/ECN-EF/2006 of December 8, 2006 creating the organization and functioning of the *Groupe d'études environnementales* du Congo (GEEC) [the Environmental Studies Group of the Congo]. • Interministerial Decree No. 006/CAB/MIN/EDD/2020 and No. CAB/MIN/FINANCES/2020/069 of July 24, 2020, setting the rates of duties, taxes, and fees to be collected on the initiative of the Ministry of Environment and Sustainable Development in relation to fauna and flora. • Prime Minister Order No. 23/22 of June 14, 2023, concerning the creation, organization and operation of a public authority called the Carbon Market Regulatory Authority in the DRC.	
Biodiversity, hunting and agriculture	Biodiversity and hunting : - Law No. 82-002 of May 28, 1982, regulating hunting; - Ministerial Order No. 020/CAB/MIN/ECN-EF/2006 of May 23, 2006, approving the list of protected animal species in the DRC; - Decree No. 014/CAB/MIN/ENV/2004 of April 29, 2004 on measures to implement Law No. 82-002 of May 28, 1982 regulating hunting; - Ministerial Order No. CAB/MIN/AFFET/276/2002, of 5 November 2002 listing protected species. Agriculture : - Law number 11/022 of December 24, 2011 bearing fundamental principles related to agriculture gives rise to the Agricultural Code.	The Project will ensure compliance with laws relating to hunting, agriculture, and biodiversity for all related activities carried out in the Concession.
Others	The Lisala REDD+ Project is also required to comply with the following legal and regulatory texts: - Law No. 14/011 of 17 June 2014 regulating the electricity sector in the DRC. - "Law No. 15/026 of 31 December 2015 concerning water management. - Decree-Law No. 081 of 2 July 1998 on the territorial and administrative organization of the DRC	The Project will ensure compliance with all other laws applicable to the activities carried out in the Concession.

Other multilateral environmental agreements have been signed or ratified by the DRC, and the Project will also ensure compliance with the following provisions:

- The Convention on Biological Diversity (June 5, 1992);
- The United Nations Framework Convention on Climate Change (June 4, 1992);

- The United Nations Convention to Combat Desertification (October 17, 1995);
- The Convention on International Trade in Endangered Species (CITES) (March 3, 1973);
- The Convention on Wetlands of International Importance, especially as Waterfowl Habitat, or RAMSAR (February 2, 1971);
- The Convention Concerning the Protection of the World's Cultural and Natural Heritage (November 23, 1972);
- The Convention on the Conservation of Migratory Species of Wild Animals, Bonn, June 23, 1979;
- The International Plant Protection Convention, signed in Rome on December 6, 1951;
- The African Convention on the Conservation of Nature and Natural Resources, Algiers, September 15, 1968;
- The Montreal Protocol on Substances that Deplete the Ozone Layer (1987);
- The Phyto-Sanitary Convention for Africa, signed Kinshasa, on September 13, 1975;
- The Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, Japan (1997);
- The Stockholm Convention on Persistent Organic Pollutants (2001);
- The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1999);
- The Convention on Biological Diversity (2000);
- The Paris Agreement, Paris, Fance (2015).

2.5.2 Human Rights (VCS, 3.19)

The Project fully recognizes, respects, and promotes the rights of Local Communities, and customary rights holders, in line with international human rights law, UNDRIP, ILO Convention 169, and relevant national legislation (Law 22/030, 2022).

All Project activities are implemented with the FPIC of Local Communities, ensuring equitable participation and benefit-sharing, and customary land tenure systems. Governance structures, including LDCs are formally recognized, with all social groups - women, youth - engaged in participatory mapping and the development of NRMPs.

The Project explicitly prohibits forced labor, child labor, sexual harassment, and discrimination. Gender equality is promoted through women's participation in governance, decision-making, and project activities. Cultural heritage, traditional knowledge, and community practices are respected and protected throughout project implementation.

CCRC, combined with a FGRM ensure that any potential violations of rights are promptly addressed. Partnerships with specialized NGOs (see Section 2.3.2) provide technical support for human rights, Indigenous rights, and community empowerment, strengthening local capacity and long-term community participation.

2.5.3 Relevant Laws and Regulations Related to Worker's Rights (VCS, 3.18.2; CCB, G3.11)

The Project fully complies with all relevant labor laws and regulations of the DRC, ensuring that all workers' rights are protected and that working conditions meet or exceed national and international standards.

An assessment of the legal framework in the environmental and social fields was conducted prior to the launch of the Project. In terms of regulations related to employment and working conditions, all applicable laws were identified and analyzed and are available in Appendix.

The Project Proponent (Taranis Congo) and the Implementing Entity (sWc Kongo) have ensured that all activities under the Project are designed and executed in accordance with these legal requirements. Compliance is achieved through the following measures:

Table 36 - Activities designed in accordance with Worker's rights

Legal requirements	Activities
Fair Employment Practices	All workers are employed under written contracts consistent with the DRC Labor Code and its implementing orders. These contracts clearly define terms of employment, remuneration, benefits and working hours.
Equal Opportunity and Gender Equality	The Project enforces gender equity policies consistent with Law No.15/013, ensuring equal access to employment and protection against discrimination and harassment. The Project will ensure equal pay.
Prohibition of Child and Forced Labor	In strict compliance with Ministerial Order No.12/CAB.MIN/TPSI/045/08, no person under the legal working age is employed, and all labor is performed voluntarily
Health and Safety	The Project maintains a Workplace Safety and Hygiene Committee as required by Order No.12/CAB.MIN/ETPS/043/2008, and provides regular safety training, protective equipment, and medical supervision in line with Order No.01/76 and Ministerial Decree No.0057/71. All safety and evacuation procedures are shared through the health, safety, and environment plan and internal regulations for the sites. These procedures were established and drafted following the impact study conducted by AMAR.
Remuneration and Benefits	All workers receive salaries at or above the guaranteed interprofessional minimum wage (Decree No.252/22) and are entitled to family allowances, weekly rest, and paid leave as mandated by law.
Workers' Representation and Dialogue	Employees are informed of their right to representation in accordance with Ministerial Decree No.048/CAB/VPM/METPS/2015, and mechanisms for collective dialogue are facilitated within Project operations (complaint and appeal mechanism).
Transparency and Oversight	Annual internal and external audits are conducted by sWc Kongo and independent professionals to verify financial integrity and social compliance.
Information and Awareness	All workers are informed of their rights and obligations through induction sessions, written materials (in local languages), and periodic awareness meetings.

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

The Project is implemented in compliance with Law No. 22/030 of July 15, 2022 and relevant international instruments, including the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169.

The Project therefore adopts a precautionary and rights-based approach to ensure that cultural heritage and traditional practices are respected and protected.

Project activities are designed to avoid disturbance of culturally significant sites and practices, which are identified and considered through participatory land-use planning and NRMPs as shown below:

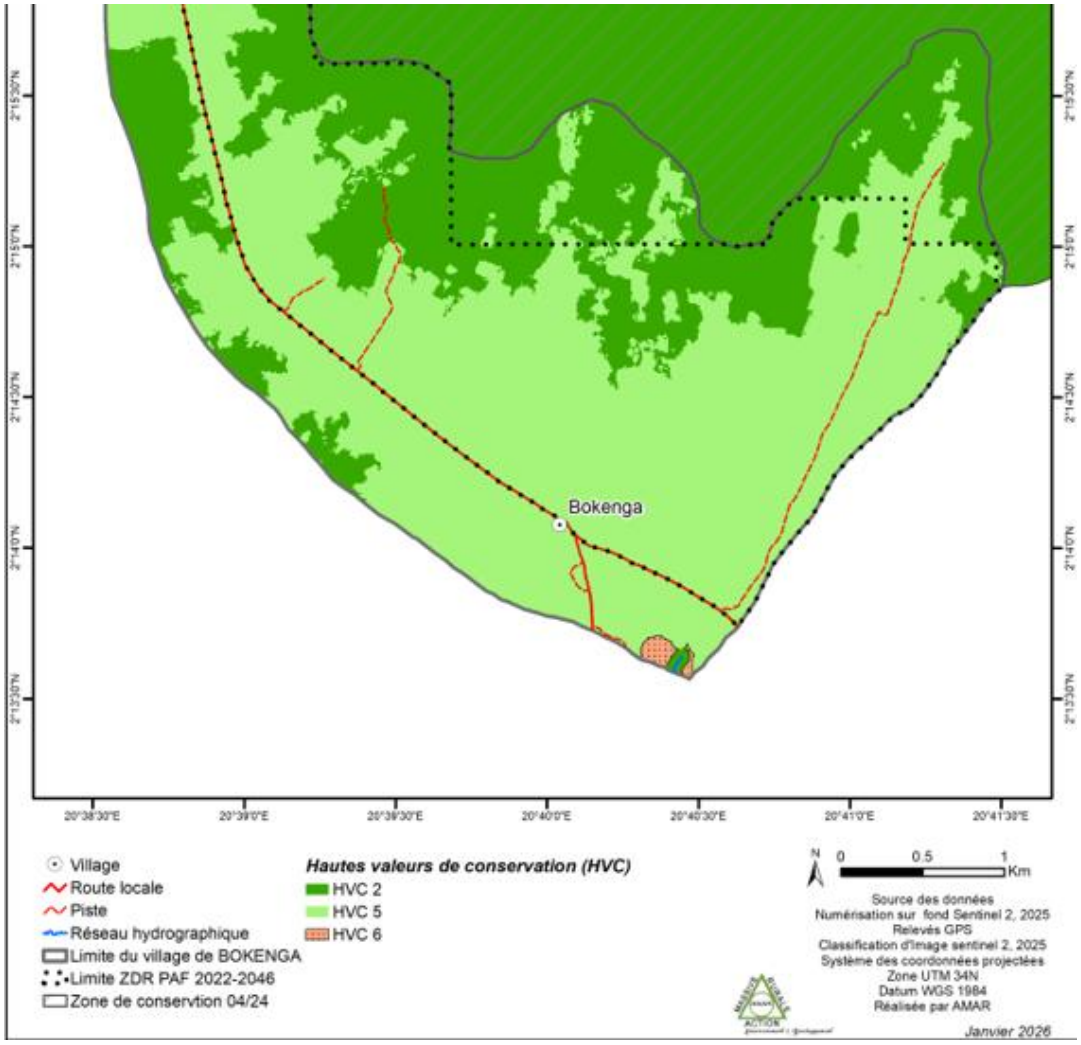


Figure 20 - Example of the village of Bokenga, where the sacred Ewowo forest has been identified in the NRMP (HCV 6)

2.5.5 Statutory and Customary Property Rights (VCS, 3.18, 3.19; CCB, G5.1)

The Project is implemented within a legally recognized forest conservation concession, pursuant to the Concession Contract signed on December 5, 2024, between the Project Proponent and the MEDD, in compliance with the 2002 Forestry Code (see Section 2.1.9).
Legal ownership of land and forest resources rests with the State. However, local communities hold legally recognized customary rights of access, use, and management, in accordance with national legislation.

Within the Concession, these customary rights include both individual and collective rights related to subsistence agriculture, hunting, fishing, gathering of NTFP, and cultural practices. These rights are exercised through traditional governance systems, involving customary authorities and village-level institutions.

To operationalize these rights and ensure their sustainable use, 76 NRMPs were developed in 2026 for each participating village (Section 2.1.17.2). These plans define community-agreed land-use allocations (Figure 10) through participatory processes.

In particular, the NRMPs delineate APZ - which include existing forest-agriculture mosaics and planned agricultural expansion zones - as well as conservation areas identified for their ecological or cultural

importance. These include HCV areas (notably HCV 2 and HCV 3) are subject to specific protection measures and restricted use.

These land-use zones and associated rights were defined through participatory mapping processes conducted with each community (AMAR, 2026), ensuring that customary boundaries, resource areas, and culturally significant sites are formally recognized and integrated into project planning.

All natural resource management rules defined in the NRMPs are established in compliance with national legislation. They are binding for both community members and external users and are implemented and monitored by local governance bodies, including the LDC.

2.5.6 Recognition of Property Rights (VCS, 3.7, 3.18, 3.19; CCB, G5.1)

The Project fully recognizes, respects, and supports all statutory and customary property rights within the PZ. No Project activities interfere with these rights without the FPIC of affected rights holders.
To strengthen the recognition of these rights, the Project has implemented participatory mapping and the development of NRMPs at the village level, which formally document customary land use, boundaries, and culturally significant sites. Additional measures include:

- Involving communities and customary authorities in governance structures and land-use planning;
- Establishing grievance mechanisms to address potential conflicts or infringements on rights;
- Providing capacity-building for communities to manage resources sustainably and assert their customary rights.

These actions ensure that all property rights are maintained, respected, and supported throughout the Project's implementation.

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

Obtaining FPIC is a mandatory regulatory step for project approval, in accordance with Ministerial Decrees No. 026/2017 and No. 047/2018, as well as the national REDD+ strategy. A first facilitation mission to secure the FPIC of local communities was conducted in the 77 villages within and around the concession area, culminating in the signing of FPIC at the Groupement level.

Table 37 - Description of the FPIC process

Description of process for obtaining consent	Consent to implement project activities was obtained through a structured FPIC process, in line with national REDD+ regulations in the DRC. The process involved local communities, customary rights holders, and relevant local authorities. The FPIC process was facilitated by the NGO AMAR and followed a gradual, participatory approach. It began with institutional-level consultations, including awareness-raising workshops at the in Lisala, with provincial then territorial authorities ; involving administrative authorities, decentralized technical services, civil society representatives, and customary leaders. These consultations ensured

alignment with local governance structures and transparency of the Project objectives.

Figure 21 - Information and training meeting with AMAR and sWc Kongo before the launch of the mission

Village-level FPIC consultations were then conducted in all villages within the PZ. During these sessions, 3 meetings were hold in each villages and communities were informed about :

- Project objectives and planned activities;
- Introduction of Taranis Congo and sWc Kongo;
- Forest conservation and ecosystem services;
- FPIC approach and community conservation;
- Governance mechanisms (LDC and NRMP)
- Benefits sharing plan and PES programs.

Figure 22 - Awareness session in a

Participation was inclusive, with specific attention given to the involvement of women. At the end of the consultations, communities freely expressed their consent through the signing of FPIC agreements for participating in the Project.

Figure 23 - Signing of the FPIC at the Groupement level

Outcome of the first FPIC process	As a result of the FPIC process, 77 out of 77 villages expressed their consent to participate in the project and signed FPIC records. For each of the three meetings leading to the FPIC signatures, 3725 inhabitants on average (summed across all villages) participated, with 1133 women (30% of participants)[69]. This process led to the signing of a Groupement-level FPIC agreement, as well as the establishment of a Monitoring Committee (CSMA-FPIC) and a Framework for CCRC. These mechanisms are responsible for monitoring compliance with commitments, addressing grievances, and supporting dialogue throughout project implementation.

The signing of the FPIC, which reflected the communities' willingness to participate in the Project, was a mandatory prerequisite. It then allowed the Project implementation phase to begin, starting with the creation of the LDCs.

Table 38 - Public meetings leading to LDCs creation

FPIC process leading to LDCs creation	Following the initial phase of FPIC processes, which ensured village participation in the Project, a second phase of public meetings was conducted to identify community representatives for the formation of LDCs. These meetings, held over an average of 5 days per village, followed a structured approach: • first, awareness-raising sessions to obtain FPIC for the establishment of the LDC, reinforcing key messages from the Project FPIC phase and explaining the purpose and functions of the LDC; • second, detailed presentations on the LDC's positions and bodies, including the roles and responsibilities associated with each; • third, the election and installation of LDC members, including the organization of elections for the executive and oversight committees, validation of results, signing of installation reports, and capacity-building for the elected committee and its members in community assemblies; • and fourth, a guided reading of the LDC's by laws and internal regulations. Each LDC also signed a memorandum of collaboration with the Project, affirming their commitment to its implementation. In total, 24,936 participations were recorded over these five days, with 7,029 women (28% of the participants). These outcomes reflect the full and effective engagement of local communities and mark a significant step in strengthening the institutional framework for community governance under REDD+.

[69] Mission Report on Facilitation of obtaining Free, Prior and Informed Consent (FPIC) from local communities (…) Conservation Concessions No.03/24 in Lukolela and No.04/24 in Lisala, within the Framework of the Implementation of the REDD+ Dibétou Project, July 2025

	The next steps in the REDD+ project approval process were presented and explained to local communities and local authorities.

The FPIC process confirmed that customary land and resource rights are respected, that no displacement or land use restrictions will occur without prior consent, and that community feedback and recommendations have been integrated into project planning.

2.5.8 Benefit Sharing Mechanisms (VCS, 3.18, 3.19)

Table 39 - Benefit Sharing Mechanisms

Process used to design the benefit sharing plan	Although the Project does not result in any restriction or loss of statutory or customary property rights, a benefit sharing mechanism related to the sale of carbon credits has been established in accordance with national regulations and international REDD+ safeguards. The process was conducted in line with the Project's FPIC framework and national REDD+ regulations. At the national level, the profit-sharing framework for carbon credit revenues was defined through Ministerial Orders n°006/CAB/MINETAT-MIN/EDD/FBM/TSB/02/2023 and n°120/CAB/MIN.FINANCES/2023 of 15 September 2023, and establish the distribution of the State's share of revenues from the sale of carbon credits. These regulatory instruments were formally validated by the MEDD[70]. The Benefit Sharing Mechanisms are set forth in the Framework Agreement between the DRC (represented by the MEDD) and Taranis, signed in 2024. At the local level, the benefit-sharing plan has been informed by the extensive participatory process, which has included socio-economic data collection, consultations and discussions with LDCs, covering all villages communities. Consultations enabled communities to identify their development priorities and to define how project benefits should be allocated to support sustainable livelihoods (NRMPs) and community infrastructure through the creation of LDF.
Summary of the benefit sharing plan	The plan includes[71] - The financing and implementation of community-led activities in sustainable agriculture and natural resource management, aimed on the one hand at ensuring food security (increased productivity in subsistence agriculture) and on the other hand at ensuring the economic development of populations (development of perennial crops such as coffee or cocoa that can be marketed). Participating communities then receive PES. - The establishment of a LDF, used primarily to rehabilitate or construct public infrastructure, such as schools and health centers, in accordance with locally defined priorities. This fund, governed by a specific agreement signed between the communities and the Project, is managed participatively and transparently by community representatives with the support of sWc Kongo.

[70] Refer to the Framework Agreement between Taranis and the DRC (available to auditors).
[71] As set forth in the Framework Agreement between the DRC (represented by the MEDD) and Taranis, signed in 2024

	- The government also benefits, as a share of the net profit generated from carbon credit sales is allocated to the State in accordance with applicable regulations.
Approval and dissemination of benefit sharing plan	The funding of community activities in the areas of sustainable agriculture and natural resource management is decided through the NRMP of each village, which is developed and validated with the LDCs and renewed every 10 years. At the Groupement level, a memorandum of Agreement was negotiated and signed between the Project Proponent and representatives of local communities (through the CSMA-FPIC) to specify the Project Proponent's voluntary commitments under the LDF. This agreement defines the responsibilities of each party, the allocation procedures and the mechanisms for monitoring and reporting on the use of funds. The final version of the benefit-sharing plan and the Groupement-level agreement will be shared with the MEDD. It will also be shared with villages with culturally appropriate communication channels materials in Lingala. Copies of these documents will be kept by both the project management unit and local authorities, ensuring that they remain readily accessible to all stakeholders who wish to review or verify the terms of the benefit-sharing mechanism.

2.5.9 Property Rights Protection (VCS, 3.18, 3.19; CCB, G5.3)

The Project does not entail any involuntary removal or relocation of communities, households, or property rights holders (please refer to Section 2.5.7).

During the NRMPs elaboration phase, participatory mapping and social consultations were conducted in collaboration with LDCs and local stakeholders to clearly identify traditional land boundaries, resource use zones, and areas of cultural significance. These exercises ensured that Project interventions were spatially defined in a manner that fully respects customary ownership, traditional livelihoods, and cultural practices. NRMPs delineate current and future APZ, as well as protected areas, while respecting existing agricultural operations and ensuring no expropriation takes place.

The Project also promotes the formal recognition of customary rights by aligning its activities with national land policies and by strengthening local governance structures that manage natural resources collectively. In this way, the Project not only safeguards existing rights but also contributes to their legal and institutional reinforcement.

2.5.10 Illegal Activity Identification (VCS, 3.19; CCB, G5.4)

The main potential threats linked to illegal activities within the PA concern the illegal extraction of natural resources, including:

- Illegal logging for fuelwood, trade, or construction purposes;
- Poaching of protected or threatened wildlife species;
- Use of destructive fishing practices, such as poisoning or the use of mosquito nets;
- Slash-and-burn agriculture within conserved forest zones.

The Project aims to combat illegal activities through awareness-raising and the promotion of sustainable alternative livelihoods, in order to avoid any conflict or forced restriction on local resource users. To this end, a series of integrated and preventive measures have been designed to reduce illegal practices while strengthening community engagement and ownership of conservation objectives. These include :

- Supporting alternative livelihood activities (sustainable agriculture, agroforestry, fish farming, etc.) to reduce dependence on illegal resource extraction;
- Conducting awareness and environmental education campaigns to inform local populations about the ecological, legal, and social importance of forest and biodiversity conservation;
- Deploying a team of eco-guards within the Concession, who will collaborate with local authorities and community representatives (LDCs and CSMA-FPIC) to monitor forest areas and report or prevent any illegal activities, particularly poaching or unauthorized logging.

sWc Kongo field staff are responsible for ensuring compliance with labor regulations and ethical standards. Regular monitoring and community reporting mechanisms will ensure continuous vigilance and prompt corrective action in case of any violation.
It is also important to note that the benefit-sharing mechanisms (PES and LDF) are conditional upon compliance with the NRMPs, particularly the respect of protected areas by local communities.

2.5.11 Ongoing Disputes (VCS, 3.18, 3.19; CCB, G5.5)

Some localized disputes were identified during the historical period of logging concession management with previous concession holder. These primarily concerned community dissatisfaction related to the limited implementation of social clauses that had been agreed upon by the former concession holder prior to the start of the current project.

The main conflicts identified were as follows:[72]

- The Bokutu report several boundary disputes with the Bongopa (to the north), Bosongomani (to the west) and Bonguma groups, and at the boundary of the Ngombe Doko sector (and thus with the Bwela group to the east). These conflicts were primarily territorial in nature; specifically, they concern the boundaries of hunting grounds;
- The Bongombo reported being in conflict with the Bombia Group in the Motima sector, around the villages of Wanga and Ngale, and also with the populations of South Ubangi;
- The Bwela, on the other hand, were involved in a conflict linked to logging with the Ndeke and the Bokutu. During the logging era, each group tried to push back its boundaries to secure the greatest possible gain when logging operations passed through the area via the development fund.

At present, several localized conflicts have been identified: power struggles within an individual village and conflicts between neighboring villages over disputed areas.

The inclusion of Sanga 1 in the Project was constrained by an internal leadership conflict between the acting village chief and the former chief, who was recently reinstated to his position by the sector chief. Despite this decision, the acting chief, supported by the group chief, refuses to relinquish power. This power struggle has caused a deep division within the population, and the tense atmosphere does not

[72] Forabola (2021) Management Plan 036/11, Lisala

allow the Project activities to be carried out for the moment. If the conflict is resolved, discussions with the village may resume to integrate it in Project's activities.

Conflict zones refer to areas of land claimed by neighboring communities. Four villages within the PZ are concerned by such land disputes. These conflict zones have been incorporated into the NRMPs in order to maintain their acceptability among the different communities concerned, while being clearly identified as disputed areas. Consequently, no NRMP activities are implemented in these zones until customary and administrative authorities reach a resolution to the conflicts. In this regard, the NRMP is not intended to directly resolve disputes. However, the project may support the communities concerned, with the involvement of relevant stakeholders, to help facilitate the resolution of these conflicts.
The Project has established a FGRM in collaboration with customary authorities to ensure that any future disputes can be addressed transparently, peacefully, and through dialogue (Section 2.3.15).

2.5.12 Approvals (CCB, G5.7)

The Project was officially approved by the MEDD through the signing of a Memorandum of Understanding.

This approval was followed by information and consultation meetings with provincial and territorial authorities, resulting in duly signed reports (please refer to Sections 2.3.5 and 2.3.10).

At the local level, the Project received formal approval from 77 villages, as evidenced by the signing of 77 FPIC records (*cf 2.5.7*). A consolidated FPIC agreement was then signed at the Groupement level by the Project representatives, the decentralized territorial entities (Groupement Chief, sector chief, and territorial administrator) together with all elected community representatives.

The Project will follow the national homologation process for approval and carbon right allocation to the Project Proponent.

2.5.13 Double Counting and Participation under Other GHG Programs (VCS, 3.23; CCB G5.9)

2.5.13.1 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

2.5.13.2 Registration in Other GHG Programs

Has the Project registered under any other GHG programs?

☐ Yes ☒ No

Is the Project active under the other program?

☐ Yes ☒ No

2.5.13.3 Projects Rejected by Other GHG Programs

Has the Project been rejected by any other GHG programs?

☐ Yes ☒ No

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

2.5.14.1 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

If yes, provide all required evidence of no double claiming as outlined by the VCS Standard.

2.5.14.2 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

If yes, provide all required evidence of no double claiming as outlined by the VCS Standard.

2.5.14.3 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

If yes:

Has the Project proponent(s) or authorized representative posted a public statement on their website saying, “Carbon credits may be issued through Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities].”?

☐ Yes ☒ No

2.6 Additional Information Relevant to the Project

2.6.1 Leakage Management (VCS, 3.11, 3.15)

The Project aims to reduce deforestation and forest degradation by addressing the main drivers of forest loss within the PA, including slash and burn, unsustainable wood harvesting and charcoal production.

As these activities contribute to local household incomes, there is a potential risk that restrictions within the project boundary could result in the displacement of such activities to surrounding areas. The Project therefore integrates leakage prevention and mitigation measures into its overall design to ensure that emission reductions are real, permanent, and not offset by increased deforestation elsewhere.
The sections below provide a summary of the key leakage risks and mitigation measures:

2.6.1.1 Identification of Potential Leakage Sources

Based on the baseline scenario and local land-use dynamics, the main potential sources of activity-shifting leakage include:

- Agricultural expansion: With restrictions on crop expansion, shifting cultivation practices could move outside the project boundary.
- Wood harvesting and charcoal production: Restrictions on forest exploitation may increase pressure on adjacent forests if alternative energy and wood supply options are not available.
- Hunting and extraction of forest resources: Limitations on forest access could lead to displacement of these activities to non-project areas.

2.6.1.2 Leakage mitigation measures

Leakage Management Zone is defined as "*the discrete geographical area outside of the project area where project activities are implemented to reduce the risk of activity-shifting leakage*[73]". The following projects implemented under the Project may therefore be regarded as leakage mitigation measures :

- **Sustainable livelihoods and land-Use management:** The Project promotes the optimization of agricultural practices through technical assistance, improved inputs, reduced fallow periods, and the introduction of agroforestry. Additionally, by supporting the cultivation of high-value perennial crops (such as coffee and cocoa), the Project aims to enhance household economic conditions. It also facilitates the establishment of community woodlots to alleviate pressure on natural forests for charcoal production. These interventions in 76 villages in and around the Concession - by boosting productivity in designated agricultural areas, reducing reliance on forest resources, and improving quality of life help minimize the need to leakage on forested areas within or beyond the Concession.

- **Institutional strengthening and community-based governance**: Leakage risks are further mitigated through strengthened local governance structures and participatory NRMP. Groupement-based monitoring mechanisms (CSMA-FPIC) and local institutions (LDCs) are supported to promote compliance with agreed land-use rules. Eco-guards are also responsible for verifying compliance with NRMP boundaries, thereby preventing leakage.

[73] Verfied Carbon Standard (2024) - Program Definitions

- **Incentive mechanisms and benefit sharing***:* As explained above, the PES are conditional upon compliance with the NRMPs. Even outside the Concession areas, if leakage occur due to communities participating in the Project, it will be considered a failure to respect the NRMP zones, thereby jeopardizing the benefit-sharing agreement.

Thus, all areas defined under the NRMPs that are not within the PA can be considered part of the leakage mitigation zone. It should be noted that certain parts of the leakage mitigation zone are even outside the Concession, as nine villages not situated within the geographical boundaries of the Concession have agreed to participate in the project and have drawn up NRMPs (see Figure 10). Furthermore, some villages within the Concession have NRMPs that sometimes extend beyond the Concession's boundaries.

2.6.1.3 Leakage monitoring

The Project applies a monitoring framework designed to ensure the respect of NMRP zones, to detect potential leakage and assess the effectiveness of mitigation measures. Monitoring combines spatial analysis (please refer to Section 3.3.3) and field-based observations with socioeconomic data collected at the community level. Community members and local stakeholders (LDCs, CSMA-FPIC..) are encouraged to report signs of unauthorized forest clearing or resource use outside the areas designated in the NRMP (inside or outside the Concession), enabling timely response and corrective actions.

2.6.2 Further Information

Not applicable.

3 CLIMATE

3.1 Application of Methodology

3.1.1 Title and Reference of Methodology (VCS, 3.1)

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Methodology	VM0007	REDD+ Methodology Framework (REDD+ MF)	1.8
Tool	VT0001	Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities	3.0
Module	VMD0001	Estimation of carbon stocks in the above- and belowground biomass in live tree and non-tree pools (CP-AB)	1.1
Module	VMD0002	Estimation of carbon stocks in the dead-wood pool (CP-D)	1.1
Module	VMD0007	Estimation of baseline carbon stock changes and GHG emissions from unplanned deforestation and unplanned wetland degradation (BL-UP)	3.3
Module	VMD0010	Estimation of emissions from activity shifting for avoided unplanned deforestation and avoiding unplanned wetland degradation (LK-ASU)	1.2
Module	VMD0013	Estimation of GHG emissions from biomass and peat burning (E–BPB)	1.2
Module	VMD0015	Methods for monitoring of GHG emissions and removals (M-REDD)	2.2
Module	VMD0016	Methods for stratification of the PA (X-STR)	1.2
Module	VMD0017	Estimation of uncertainty for REDD project activities (X-UNC)	2.2
Tool	NPRT	AFOLU Non-Permanence Risk Tool	4.2

3.1.2 Applicability of Methodology (VCS, 3.1)

Reference ID / Title	Applicability condition	Justification of conformance
VM0007 [1]	Land in the PA has qualified as forest for at least 10 years prior to the project start date. Mangroves excluded from height requirement.	Land within the PA qualified as forest for at least the 10 years prior to the project start date (i.e. before 2014), as confirmed by the Joint Research Centre (JRC) Tropical Moist Forest (TMF) dataset, which serves as the forest benchmark map. No mangroves are present in the PA.
VM0007 [2]	Where land within the PA is peatland or tidal wetlands and emissions from the SOC pool are deemed significant, relevant WRC modules must be applied.	Peatlands have been identified in limited portions of the PA using peat thickness and extent data from Crezee et al. (2022). A significance test of potential SOC emissions was conducted in accordance with Annex 1 of VM0007 and demonstrated that SOC emissions are non-significant (de minimis). Therefore, WRC modules are not applied.
VM0007 [3]	Baseline deforestation is unplanned (AUDef) or planned (APDef).	Baseline deforestation is unplanned (AUDef), driven primarily by shifting agriculture, consistent with historical observations in the reference region.
VM0007 [4]	Flooding agricultural lands or intensifying livestock production via feed-lots or manure lagoons for leakage prevention is not allowed.	Project activities do not include flooding of agricultural lands nor livestock intensification. Activities focus on forest conservation, agroforestry and low-intensity subsistence agriculture.
VM0007 [5]	Baseline agents lack legal rights to deforest and are residents or immigrants clearing land for small-scale agriculture or settlements.	Baseline agents are smallholder households practicing slash-and-burn agriculture without documented or uncontested legal rights to deforest and are mainly residents.
VM0007 [6]	Applicable only to planned deforestation (APDef) where post-deforestation land use is reforestation.	Not applicable. The project baseline is unplanned deforestation (AUDef); post-deforestation land use in the baseline corresponds to agricultural expansion and fallow, not reforestation.
VT0001 [1]	AFOLU activities must not violate applicable laws.	All AFOLU activities implemented under the project comply with applicable national and provincial laws of the DRC, as documented in the Legal Compliance section.

VT0001 [2]	Tool requires identification of plausible alternative land-use scenarios using a stepwise approach.	Plausible alternative land-use scenarios were identified in accordance with Sub-step 1b of VT0001 and the most plausible baseline scenario consists of the continuation of existing unplanned deforestation activities driven by shifting agriculture
VMD0001 [1]	Applicable to all forest types and age classes.	Applicable, as the PA is composed of tropical moist forests across a range of age classes.
VMD0007 [1]	Applicable for estimating baseline emissions from unplanned deforestation converting forest land to non-forest land.	Applicable, as baseline deforestation is unplanned and results in conversion of forest to agricultural land within a transition-type deforestation pattern.
VMD0007 [2]	Baseline agents are small-scale actors lacking legal rights, residents or immigrants.	Baseline agents in the reference region are smallholder farmers operating without legal rights to deforest and comprising mainly resident households.
VMD0010 [1–3]	Mandatory where BL-UP is applied to estimate leakage from displaced activities.	BL-UP is applied in the project; therefore, VMD0010 is mandatorily applied to estimate emissions from potential displacement of deforestation activities.
VMD0015 [1]	Strata defined in baseline modules are fixed unless baseline is revised.	Baseline strata distinguishing terra firme dense forest and swamp forest, as well as mineral soils and peatlands, were defined at the project design stage and will remain unchanged unless a formal baseline revision is undertaken
VMD0016 [1]	Required to delineate peat and non-peat areas unless SOC emissions are de minimis.	Peat and non-peat zones were delineated using Crezee et al. (2022) data. SOC emissions were demonstrated to be non-significant; therefore, no further stratification by peat depth is required.
VMD0017 [1–4]	Mandatory module to estimate uncertainty with a 95% confidence interval and ≤15% precision target.	The project applies VMD0017. Uncertainty assessments cover deforestation rates, carbon stock estimates and emissions, with sampling design targeting a 95% confidence level and ≤15% relative precision, supported by QA/QC procedures.

3.1.3 Project Boundary (VCS, 3.12)

The Project boundary is defined in accordance with the VCS Standard and the REDD+ Methodology Framework (VM0007). The project is implemented as an Avoided Unplanned Deforestation (AUDef) REDD project activity.

The project boundary encompasses all geographical areas, carbon pools, greenhouse gas (GHG) sources and gases, and time periods for which changes in GHG emissions are attributable to the project activity, including baseline and leakage components.

3.1.3.1 Geographical Boundaries

The geographical boundaries of the Project are defined ex-ante and remain fixed for the duration of each baseline validity period. Any baseline revision will be conducted in line with applicable VCS rules and will not involve any ex-post modification of areas for which emission reductions have already been credited.

All spatial entities within the project boundary are delineated using Geographic Information System (GIS) tools and are based on georeferenced datasets.

The Project boundary does not overlap with any land registered under another greenhouse gas crediting program.

All land included within the project boundary qualifies as forest under the national forest definition of the DRC and has remained forested for at least ten (10) years prior to the Project start date (i.e., prior to 2014). This condition is demonstrated using time-series forest cover data from the JRC Tropical Moist Forest dataset, confirming that all included areas were forested in both 2014 and 2024.

The PA includes all forest land subject to unplanned deforestation pressures where Project activities are implemented and where avoided deforestation is claimed.

The PA covers a total of 148,183 hectares of forest subject to unplanned deforestation pressures. It consists of tropical dense forest (approximately 94%, or 139,415 ha) and tropical swamp forest (approximately 6%, or 8,768 ha). No mangrove forests are present within the project boundary.

3.1.3.2 Temporal Boundaries

The temporal boundaries of the Project are defined in accordance with the VCS Standard and the REDD+ Methodology Framework (VM0007 v1.8).

The historical reference period used to quantify historical deforestation rates spans 2014 to 2024, ending immediately prior to the project start date (2025).

The Project is registered with an initial crediting period of thirty (30) years (2025–2054) and aims to be renewed up to the maximum crediting duration of 90 years. Any subsequent renewal may be sought in accordance with the VCS Standard in force at the time of renewal, subject to this maximum duration.

Baseline emissions are projected for the first baseline validity period, the duration of which does not exceed six (6) years, as required for Avoiding Unplanned Deforestation and Degradation (AUDD) projects that do not rely on jurisdictional-level baseline allocation. Subsequent baseline validity periods will likewise not exceed six years and will be subject to baseline reassessment and independent validation, in accordance with the applicable VCS rules at the time of reassessment.

3.1.3.3 Carbon Pools

Carbon pool	Consideration	Justification / Explanation
Aboveground biomass (trees)	Included	Mandatory pool for REDD project activities under VM0007. Carbon stock changes from avoided deforestation are primarily reflected in aboveground tree biomass.
Aboveground biomass (shrubs)	Excluded	Excluded conservatively. Changes in shrubs carbon stocks are expected to be negligible relative to other carbon pools.
Belowground biomass (roots)	Included	Included following VM0007 requirements. Belowground biomass is estimated using root-to-shoot ratios consistent with IPCC guidance.
Dead wood (standing and lying)	Included	Included because carbon stock losses in the baseline scenario are significant.
Litter	Excluded	Excluded conservatively. Changes in litter carbon stocks are expected to be negligible relative to other carbon pools.
Soil organic carbon – mineral soils	Excluded	Excluded conservatively. Expected changes in SOC in mineral soils are negligible relative to other carbon pools
Soil organic carbon – peat soils	Excluded	Although peatlands were identified in limited areas of the project boundary, SOC emissions were assessed using the significance test described in Appendix 1 of VM0007 and demonstrated to be non-significant (i.e. de minimis).
Harvested wood products	Excluded	Excluded because no planned timber harvesting occurs within the project boundary under either the baseline or project scenarios

3.1.3.4 Sources of GHG Emissions

	Source	Gas	Included?	Justification / Explanation
Baseline	*Burning of woody biomass (slash-and-burn agriculture)*	*CO_2*	*Included*	*Carbon stock losses from biomass burning are accounted for as changes in carbon stocks under the baseline scenario through the conversion of forest to agriculture.*
		CH_4	*Included*	*Non-CO_2 emissions from biomass burning occur through slash-and-burn practices and are included.*
		N_2O	*Included*	
	Combustion of fossil fuels	*CO_2*	*Excluded*	*Shifting agriculture is dominated by low-technology, manual practices where fossil fuel use is negligible.*

		CH_4	Excluded	Negligible emissions.
		N_2O	Excluded	Negligible emissions.
	Use of fertilizers following deforestation	CH_4	Excluded	Shifting agriculture is based on traditional practices without fertilizer use.
		N_2O	Excluded	Negligible emissions.
Project	Burning of woody biomass	CO_2	Included	Carbon stock losses from biomass burning are accounted for as changes in carbon stocks under the project scenario through the conversion of forest to agriculture
		CH_4	Included	Non-CO_2 emissions from biomass burning are included, as they are included in the baseline scenario.
		N_2O	Included	
	Combustion of fossil fuels (project activities)	CO_2	Excluded	Fossil fuel use related to project activities is minimal and is excluded as negligible.
		CH_4	Excluded	Negligible emissions
		N_2O	Excluded	
	Use of fertilizers (project-supported activities)	CH_4	Excluded	The project does not promote fertilizer-intensive agriculture.
		N_2O	Excluded	

3.1.4 Baseline Scenario (VCS, 3.13)

3.1.4.1 Determination of the Most Plausible Baseline Scenario

The determination of the most plausible baseline scenario follows the procedure set out in Section 6.1 of VM0007 and builds directly on the outcome of the additionality analysis conducted with the VT0001 Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities and describes in Section 3.1.5.

The analysis is consistent with i) the conditions prior to the Project start date, and ii) the list of plausible alternative land-use scenarios identified under VT0001 Sub-steps 1a–1c.

Step 1 – Reuse of plausible alternative land-use scenarios

In accordance with VM0007 Section 6.1 and VT0001 Sub-step 1a, four realistic and credible alternative land-use scenarios were identified for the land within the project boundary:

<u>Scenario 1 – Continuation of pre-project land use (BAU)</u>

Abandonment of the former industrial forest concession (CCF 036/11), with the area occupied and used by local communities for small-scale shifting cultivation (slash-and-burn agriculture) and fuelwood and charcoal production.

Land cover evolves towards a “rural complex” mosaic of active fields, fallows, secondary forest and degraded forest.

Scenario 2 – Establishment of a Community Forest Concession (CFCL)

Conversion of the former concession area into a "*Concession Forestière de Communauté Locale*", legally granted to local communities, with obligations to develop and implement a sustainable management plan and monitoring system. This scenario is considered an activity similar to the proposed REDD project activity (for the purpose of VM0007 Section 6.1 Sub-step 1b(3)), as it involves formalized forest management aimed at regulating forest use and reducing uncontrolled deforestation on part or all of the PA.

Scenario 3 – Resumption of an Industrial Forest Concession (CCF)

Attribution of a new logging concession to a private operator, with renewed 25-year industrial exploitation, while local communities continue subsistence activities in designated development areas ("SDC/ZDR", Série de Développement Communautaire or Zones de Développement Rural).

Scenario 4 – Conservation Forest Concession (CFC) without VCS registration

Conversion of the former concession into a conservation concession ("*Concession Forestière de Conservation*"), with structured conservation management plan granted to private operator, but without registration as a VCS project and without carbon finance.

Sub-step 1b Consistency with mandatory applicable laws

In accordance with VT0001 Sub-step 1b, each scenario was assessed against the mandatory legal and regulatory framework in the DRC (forest law, community forestry decrees, logging regulations, environmental and social laws, REDD+ regulations, land-use planning and climate-related decrees). The analysis concludes that:

- Scenario 1 (BAU shifting cultivation and small-scale extraction) is de facto consistent with the legal framework, as small-scale forest clearing for subsistence agriculture and informal extraction occurs under widespread non-enforcement of statutory restrictions and is tolerated under customary use rights.
- Scenario 2 (CFCL), Scenario 3 (industrial concession) and Scenario 4 (conservation concession) are explicitly provided for and regulated in national legislation and are therefore legally permissible.

No scenario is excluded on the basis of non-compliance with mandatory laws and therefore all four scenarios are retained for further assessment.

Step 2 – Application of VT0001 barrier analysis

Given that the proposed Project activity (Scenario 4 – Conservation Forest Concession with REDD+) does not generate any significant financial revenues other than those derived from carbon credits, an investment analysis (VT0001 Options II or III) is not applicable. In accordance with VM0007 and VT0001, the demonstration of additionality proceeds primarily through the Barrier Analysis.

The barrier analysis, conducted in accordance with VT0001, demonstrates that Scenario 2, 3 and 4 (the proposed project activity) faces multiple, substantial barriers that prevent its implementation in

the absence of carbon finance, while Scenario 1 (continuation of pre-project land use) does not face these barriers and therefore remains fully feasible. The main categories of barriers are summarized below. A detailed assessment of each barrier is provided in Section 3.1.5.

Table 40 - Summary of barrier analysis

Barrier Category	Scenario 1 - Continuation of pre-project land use	Scenario 2 - CFCL	Scenario 3 - Industrial concession	Scenario 4 - Conservation concession / Project activity
Financial / Economic	Not affected – low-input subsistence agriculture requires no significant capital investment.	Prevented – high transaction and implementation costs cannot be covered without external financing.	Prevented – low timber profitability, degraded resources and high operational costs deter investment.	Prevented – no revenue-generating activities; costs cannot be recovered without carbon finance.
Institutional / Governance	Not affected – operates under weak formal governance structures.	Constrained – requires strong local institutions, formal governance and regulatory compliance.	Constrained – weak law enforcement and administrative capacity reduce investment viability.	Prevented – formal governance, management plans and monitoring cannot be established without external support.
Technological / Infrastructural	Not affected – relies on traditional, low-technology practices.	Prevented – requires technical inputs, monitoring systems and infrastructure.	Constrained – infrastructure and equipment requirements increase costs and complexity.	Prevented – lack of equipment, access and infrastructure for sustained conservation activities.
Social / Tenure / Cultural	Not affected – aligned with customary tenure and existing land-use practices.	Constrained – requires inclusive governance, tenure clarification and sustained participation.	Constrained – tenure uncertainty and social conflict increase investment risk.	Prevented – overlapping tenure systems and social complexity hinder formal conservation governance.
Ecological / Operational	Not affected – adapted to local ecological conditions.	Constrained – landscape-level conservation is technically complex and costly.	Constrained – dense forest, hydromorphic soils and flooding increase operational costs.	Constrained – ecological conditions significantly raise operational complexity and costs.

In accordance with VT0001 and VM0007 Section 6.1, all alternative scenarios prevented by barriers are excluded, provided that at least one viable alternative remains. After the barrier analysis, Scenario 1 is the only remaining feasible land-use scenario in the absence of the Project.

Step 3 – Selection of the most plausible baseline scenario

Because barrier analysis alone allows clear discrimination among scenarios, and because the proposed project activity does not aim to generate revenues other than carbon credits, no additional investment analysis is required under VT0001 Step 2b / VM0007 Step 2b.

In accordance with VM0007 Step 3 and VT0001 Sub-step 1c, the analysis demonstrates that:

- Scenario 1 reflects the continuation of existing land-use dynamics observed in the area since the abandonment of industrial logging;

- Scenario 1 is consistent with historical trends in similar abandoned concessions in the region, where subsistence agriculture and artisanal extraction expand progressively into former concession areas;
- Scenario 1 is not constrained by the barriers identified under Step 2, whereas Scenarios 2, 3 and 4 cannot realistically materialize without carbon finance or substantial external support.

The most plausible baseline scenario is therefore the continuation of pre-project land use by local communities leading to unplanned deforestation.

3.1.4.2 Re-assessing the Baseline Scenario

In accordance with the VCS Standard and VM0007, the Project baseline will be reassessed at the end of each baseline validity period.

As this Project is an Avoiding Unplanned Deforestation (AUD) REDD project not relying on jurisdictional-level baseline allocation, the baseline will be reassessed every six (6) years for the duration of the project, in line with VCS requirements. Accordingly, the first baseline validity period covers the years 2025 to 2030.

The starting point for each baseline reassessment will be the projected forest cover at the end of the previous baseline validity period. Revised baseline projections will be developed and validated in accordance with the applicable VCS rules in force at the time of reassessment.

Baseline reassessments will evaluate whether the selected baseline scenario remains the most plausible by considering changes in deforestation drivers, changes in the behavior or incentives of land-use agents, changes in observed land-use and forest cover dynamics during monitoring periods; and implications for baseline carbon stocks and GHG emissions.

Consistent with VM0007, ex-ante baseline projections beyond the baseline validity period are not required for REDD project activities. Therefore, baseline projections are limited in this instance to the first baseline period ending in 2030.

3.1.5 Additionality (VCS, 3.14)

3.1.5.1 Regulatory Surplus (VCS, 3.14)

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states or Non-Annex 1 country?

☐ Annex 1 country ☒ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

☐ Yes ☒ No

3.1.5.2 Additionality Methods (VCS, 3.14)

This section demonstrates the additionality of the Project activity in accordance with the VCS requirements and the VT0001 Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities. The analysis follows the stepwise approach of VT0001, including the identification of alternative land-use scenarios (Step 1), investment analysis (Step 2), barrier analysis (Step 3) and common practice analysis (Step 4), in order to establish that the proposed project would not occur in the absence of revenues from VCS GHG credits.

Step 1. Identification of alternative land use scenarios to the AFOLU project activity

Sub-step 1a. Identifying credible alternative land use scenarios to the proposed VCS AFOLU project activity

This sub-step identifies realistic and credible alternative land use scenarios that would have occurred on the land within the proposed project boundary in the absence of the AFOLU project activity under the VCS:

Scenario 1: Abandoned activity of CCF occupied by local communities with BAU (small scale agriculture)

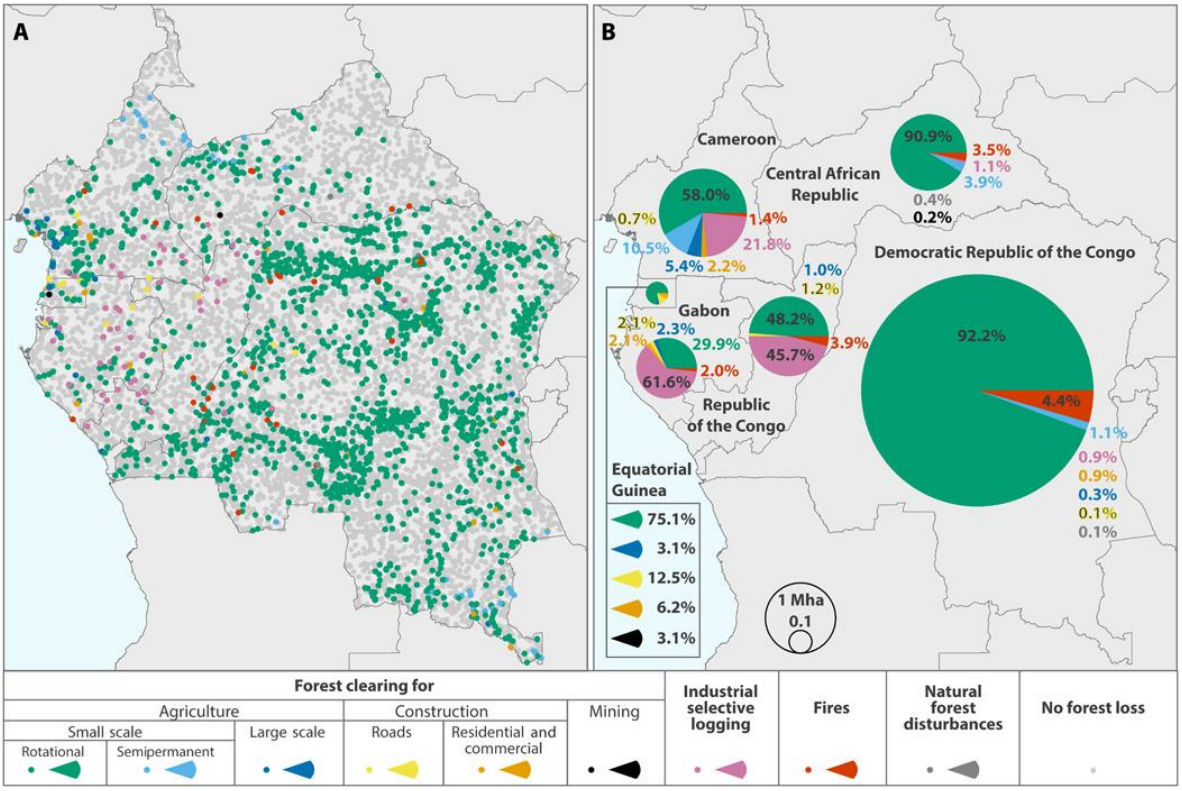
The continuation of the pre-project scenario is the result of the disposal of the Forabola logging concession contract 036/11 (Contrat de Concession Forestière, CCF) allocated on October 24th 2011, within which the local communities resided within community development series or rural development area.

In this scenario, the deforestation pattern identified in section 'Baseline scenario' section, which describes the relationship among the agents, drivers and underlying causes present in the region during the historical period, will most likely continue, causing deforestation, resulting in a rural complex landscape.

The local communities/small producers would continue to open new areas to practice subsistence agriculture, using mainly "slash and burn" practices and increments for soil fertility and food crops production in the same area. As the soils in the region are rotten in nutrients, small farmers leave the depleted areas and go in search of opening new areas to be cultivated. This practice increases deforestation, as well as the search for wood as a source of energy for family maintenance, cooking and heating.

Shifting cultivation has traditionally been practiced in the DRC by carving agricultural fields out of primary and secondary forest, resulting in the rural complex: a characteristic land cover mosaic of roads, villages, active and fallow fields and secondary forest. Forest clearing has varying impacts depending on where it occurs relative to this area: whether inside it, along its primary forest interface, or in more isolated primary forest areas. Expanding rural complex areas can persist in time and have a large spatial impact in eroding and fragmenting forest, keeping a given area not forested in the long-term.

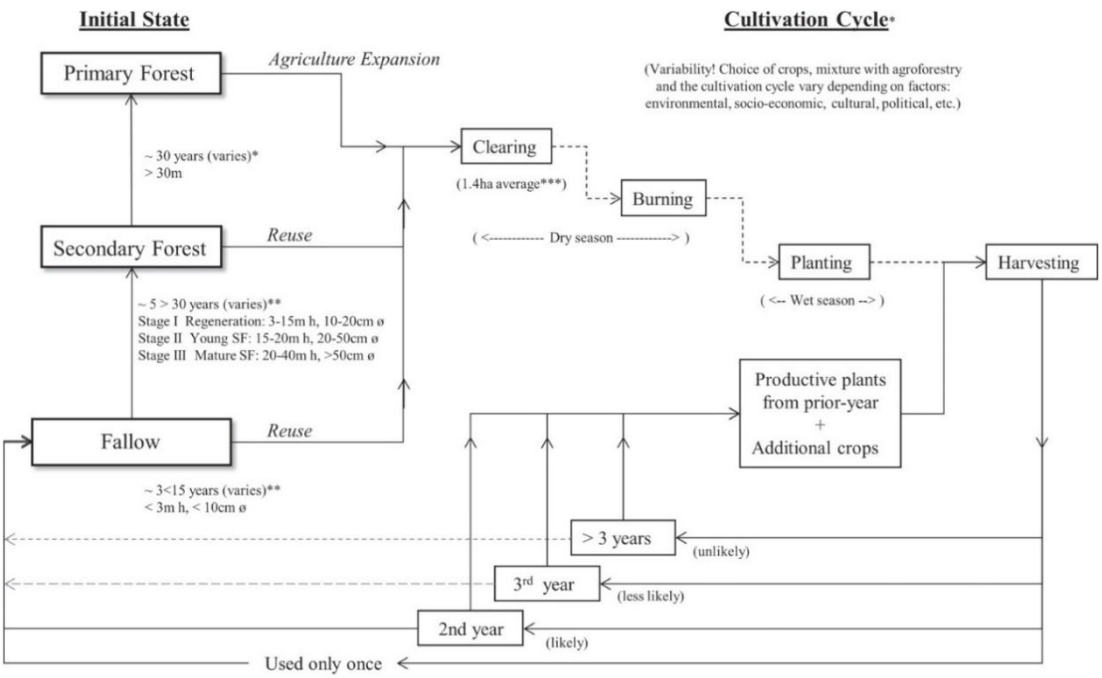
In this scenario, no conversion to community or conservation forest project is undertaken.



(A) Left-side: Reference disturbance driver for each sampled pixel. (B) Right-Side: National estimates of 2000 to 2014 forest loss area by *disturbance driver.*

Figure 24 - Forest disturbance drivers

Source: adapted from congo basin forest loss dominated by increasing smallholder clearing, tyukavina a. Et al., 2018



* Conklin (1961); Miracle (1967); Ickowitz (2006), ** SPIAF (2007); Lebrun and Gilbert (1954), *** Wilkie et al. (1998); Potapov et al. (2012)

Figure 25 - A model of the spatio-temporal cycle of shifting cultivation in DRC

Source: adapated from forest cover dynamics of shifting cultivation in the DRC: a remote sensing-based assessment for 2000-2010, molinario et al., 2015)

Scenario 2: Abandoned activity of CCF occupied by local communities with new allocation to CFCL managed by local communities

In this scenario, local communities are organizing themselves with support of an NGO, to request the establishment of a local community forest concession (Concession Forestière de Communauté Locale, CFCL): a forest allocated by the State, free of charge and in perpetuity to a local community by the State. This practice occurs based on forests regularly possessed by custom by this same community, for use in all forms to meet its vital needs, with the obligation to apply sustainable management rules and practices[74] [75] [76].

Research papers demonstrate that community forestry is unlikely to develop into a profitable model in DRC, unless people are convinced that it will increase their financial and physical capital[77].

Moreover, despite recent support for community forestry in the country, one of the remaining obstacles is the important cost of establishing a community forest. In the case studies, it costs between US$100,000 and US$160,000 to only comply with regulations.

Scenario 3: Resumption of CCF with new permit provided to a private operator with local communities located in SDC/ZDR areas

In this scenario, a private operator requests the renewal of the logging concession contract and initiate a new round of 25 years logging activity with BAU practices within which local communities are allowed to operate in SDC/ZDR determined areas. The primary purpose of forest concessions is to enable forest operators to harvest timber in accordance with sustainable forest ecosystem management practices. However, they also provide rural communities with a land reserve where they can carry out agricultural activities to meet their own needs or for development purposes.

It may also happen, due to challenges in controlling activities within the Concession, that some overlapping harvesting practices occur. With parallel forestry operators in possession of PCAs, artisanal logging activities are deployed despite the ban of operating within an industrial forest concession. This phenomenon is observed in large scale CCF where controlling illegal activities can be difficult due to lack of human and material means from the forest operator and local administration.

The timber industry has been in a difficult economic situation for several years, and industrial logging in the DRC brings only negligible economic benefits, with more than 42% of logging concessions not complying with their land tax payments[78]. Formal timber production has never exceeded 400,000

[74] Décret n° 14/018 du 02 août 2014 fixant les modalités d'attribution des concessions forestières aux communautés locales
[75] https://rdc.geocfcl.org/
[76] https://faolex.fao.org/docs/pdf/Cng179650.pdf
[77] https://faolex.fao.org/docs/pdf/Cng179650.pdf
[78] https://eia.org/press-releases/lindustrie-forestiere-rdc-entachee-dillegalites-systemiques/

m³/year and has stagnated for several years between 200,000 and 300,000 m³/year, representing barely 5% of subregional production[79].

Furthermore, the Lisala concession itself ceased all industrial logging activities in 2021 prior to the transfer of the Concession, illustrating the limited economic viability of industrial forest exploitation in this context.

Scenario 4: Conversion of the former CCF into a Conservation Forest (Concession Forestière de Conservation – CFC), implemented without registration under the VCS

A fourth land-use scenario consists of the conversion of the Concession into a "Concession Forestière de Conservation (CFC)" without registration as a VCS project. This type of allocation is legally permitted under the Forest Code (Law 011/2002) and its implementing regulations, which allow the State to assign forest areas for conservation purposes, excluding commercial logging while maintaining community use rights.

This scenario is possible, because conservation concessions are explicitly recognized in national legislation and may be allocated by the State to a public, private or community-oriented entity for non-extractive forest management. Although such concessions remain rare in practice and generally require external support to operate, their creation is not legally restricted and therefore cannot be excluded at this stage of the analysis.

Under this scenario, the operator could be attributed as a conservation concession aiming to preserve forest ecosystems, regulate resource use and support local development needs, but without any carbon project registration and without relying on carbon finance. The conservation activities would therefore need to be implemented using alternative sources of funding (e.g., state budget, donor support, NGO programs), as legally allowed but not guaranteed.

In accordance with VT0001 Sub-step 1a requirement (ii), this scenario corresponds to "Project activity on the land within the project boundary performed without being registered as the VCS AFOLU project."

Sub-step 1b. Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations

In accordance with VT0001 Sub-step 1b, this section evaluates whether each of the alternative land-use scenarios identified in Sub-step 1a complies with the mandatory legal and regulatory framework applicable in the DRC. The purpose of this step is not to assess the likelihood of the scenarios but solely to determine whether any scenario must be excluded on the grounds of non-compliance with mandatory laws and regulations.

Forest and land-use activities in the DRC are governed by several legal instruments. Enforcement remains incomplete in practice due to limited institutional capacity, but the mandatory nature of the laws remains unchanged. Key legal texts relevant to the analysis of the four scenarios are summarized in Table below:

[79] https://www.salvaterra.fr/wp-content/uploads/2024/12/12053-Rapport-12053-RD-Congo-MCo-Etude-de-marche-du-bois-doeuvre-2024.pdf

Table 41 - Key legislative texts in the DRC

Regulation	Object
Forest related activities are highly regulated in the DRC. However, all mandatory legal or regulatory requirements are not systematically enforced because of lack of means for controlling	
Loi Nº 011/2002 portant Code forestier[80]	*Conservation, exploitation, and development of forest resources throughout the national territory*
Décret n°14/018 du 2 août 2014 fixant les modalités d'attribution des concessions forestières aux communautés locales[81]	*Procedures for granting forest concession status to forests located on land occupied by local communities*
Arrêté ministériel n°035/CAB/MIN/ECN-EF/2006 du 5 Octobre 2006 relatif à l'exploitation forestière [82]	*Listing of the various cutting permits existing, including artisanal cutting permits*
Agriculture activities	
Politique de l'agriculture durable de la RDC [83]	*Sustainable Agriculture Policy is a cross-sectoral document of the DRC with national scope which, for the period 2022-2030, serves as a reference and guidance tool for the agricultural sector*
Land tenure related impacts on the project	
Loi n°25/045 du 1er juillet 2025 relative à l'aménagement du territoire	*Improving the organization for allocation, management, and use of territory to prevent conflicts of use and to articulate national priorities*
Climate regulation related impacts on the project	
Interministerial Decree No. 006/CAB/MINETAT-MIN/EDD/EBM/TSB/02/2023 and No. 120/CAB/CAB/MIN.FINANCES/2023 of September 15, 2023, establishing the distribution of the state's share of the profits from the sale of carbon credits.	*Determines the terms and conditions for distributing the State's share of the profits from the sale of carbon credits in accordance with the mechanism for reducing emissions from deforestation and forest degradation in developing countries (REDD+)*
Ministerial Decree No. 047/CAB/MIN/EDD/AAN/MML/05/2019 of May 9, 2018, establishing the procedure for the approval of REDD+ investments in the DRC	*Determines the formalities to be completed in order to obtain approval for a REDD+ investment, the measures to be taken to ensure benefit sharing, compliance with social and environmental safeguards, and the mechanisms for managing related conflicts*
Environmental and Social regulation	

[80] https://www.fao.org/faolex/results/details/en/c/LEX-FAOC034383
[81] https://www.fao.org/faolex/results/details/en/c/LEX-FAOC140362
[82] https://www.leganet.cd/Legislation/Droit%20economique/Code%20Forestier/AM.035.05.10.06.pdf
[83] https://www.fao.org/faolex/results/details/en/c/LEX-FAOC214543

Law No. 11/009 of July 9, 2009, on Fundamental Principles relating to Environmental Protection[84]	*Sets out the fundamental principles of environmental protection and establishes the institutional framework and procedural and financing mechanisms for environmental protection*
Law No. 22/030 of July 15, 2022, on the protection and promotion of the rights of indigenous Pygmy peoples[85]	*This law officially recognizes the rights of indigenous peoples and local communities and protects them from all forms of discrimination and violence. This legislation also addresses the land rights of its people, who have been victims of dispossession of their property*

Based on this legal framework, the compliance of each land-use scenario identified in Sub-step 1a is examined below to verify whether they can be implemented in accordance with all mandatory legal and regulatory requirements:

Legal consistency of Scenario 1 Continuation of pre-project land use involves shifting cultivation

Although the Forest Code does not explicitly authorize forest clearing for agriculture, it recognizes customary user rights (droits d'usage coutumiers) for local communities (Articles 36–39 of Law No.011/2002), including access to land and forest resources for meeting subsistence needs. In practice, small-scale clearing for shifting cultivation is widespread throughout rural DRC and occurs under a context of systematic non-enforcement of land-use restrictions, as documented in multiple governance assessments. Under VT0001 Sub-step 1b, land-use activities may be considered legally consistent where non-compliance with statutory requirements is widespread and results from a persistent lack of enforcement. Scenario 1 is therefore retained.

Legal consistency of Scenario 2: Community Forest Concession (CFCL)

Community Forest Concession (CFCL) is directly supported by the legal framework governing community-led forest management. Decree n°14/018 establishes the full legal process for granting CFCLs and defines the obligations regarding governance, management plans, monitoring and sustainable resource use. Environmental and social legislation (Law n°11/009 and Law n°22/030) applies but does not restrict the attribution or operation of CFCLs. Scenario 2 is therefore legally permissible and consistent with all mandatory regulations.

Legal consistency of Scenario 3: Industrial Logging Forest Concession (CCF)

Industrial Logging Forest Concession (CCF) are a core component of the Forest Code. Applicable rules under the Forest Code, Ministerial Order n°035/2006 and environmental protection legislation provide a full legal framework for the allocation and operation of CCFs. No mandatory legal provisions prevent a private operator from applying for or operating such a concession. Scenario 3 is therefore legally valid.

Legal consistency of Scenario 4: Conservation Forest Concession (CFC)

Conservation Forest Concession (CFC) is explicitly grounded in Congolese forest law. The Forest Code allows the allocation of concessions for conservation purposes, and the REDD+ regulatory framework (Ministerial Decree n°047/2019 and Interministerial Decrees n°006/2023 & n°120/2023) provides

[84] https://www.fao.org/faolex/results/details/fr/c/LEX-FAOC109798
[85] https://www.fao.org/faolex/results/details/fr/c/LEX-FAOC213451

clear procedures for approval, safeguards, and revenue-sharing. Environmental and social safeguards reinforce, rather than restrict, conservation-oriented concessions. Scenario 4 therefore conforms to all mandatory applicable laws.

In summary, all four land-use scenarios identified in Sub-step 1a satisfy the mandatory legal and regulatory requirements of the DRC. None meet the criteria for exclusion under VT0001 Sub-step 1b. Accordingly, the complete set *of alternative land-use scenarios is retained for the subsequent additionality assessment.*

Sub-step 1c. Selection of the baseline scenario

In accordance with VT0001 Sub-step 1c and with the requirements of VM0007, the most plausible baseline scenario must be selected from the list of alternative land-use scenarios identify previously in Sub-step 1b. This selection must reflect the land-use dynamics that would occur in the absence of the proposed project activity and must be consistent with historical trends, local socio-economic drivers, institutional capacity, and the practical feasibility of each scenario.

Among the four scenarios identified in Sub-step 1a, Scenario 1 ("Continuation of pre-project land use") represents the continuation of the land-use dynamics that have been observed since the abandonment of operations in the former forest concession (CCF). Local communities have progressively occupied the area and are practicing small-scale shifting cultivation, extraction of forest products, and artisanal logging. These activities correspond to the patterns historically observed in comparable settings where industrial operators have abandoned operations and where no structured land-management framework replaces the former concession. This trajectory reflects the most common outcome in the region, where informally expanding agriculture has become the predominant drivers after the cessation of industrial operations. Scenario 1 therefore provides a realistic continuation of existing practices and socio-economic pressures.

Scenario 2 ("Conversion of the former CCF area into a CFCL") is less likely to materialize in practice. Although the legal framework for community forest concessions exists, the effective establishment and management of CFCLs requires substantial technical, financial and organizational capacity that is generally lacking among local communities in the region. Experience to date in the DRC indicates that the number of CFCLs effectively created and operational remains limited, primarily due to the high costs associated with the preparation of management plans, monitoring requirements, and administrative procedures. Furthermore, because community forestry does not typically generate significant short-term economic returns, local communities have shown limited incentive to engage in the process without external funding and long-term support. For these reasons, the likelihood that Scenario 2 would spontaneously occur in the absence of the proposed project is considered low.

Scenario 3 ("Resumption of the CCF by a new private operator") is also highly unlikely. The previous concessionaire formally withdrew from the Concession due to low profitability and the absence of commercially valuable timber stocks, which is consistent with the degraded and highly fragmented nature of secondary forests in the area. The establishment of a new industrial concession would require substantial investment in infrastructure, equipment, and personnel, while expected revenues from timber harvesting remain uncertain and generally low. Current market conditions for the timber species available in the region do not provide sufficient guarantees for financial viability, and the local context does not offer incentives that would offset the significant operational risks. Therefore, a new private operator applying for a CCF in this area is considered very unlikely.

Scenario 4 represents a conservation concession implemented without VCS registration and without carbon finance. It is therefore distinct from the proposed VCS project activity. However, due to the absence of guaranteed long-term funding, it is considered unlikely to occur in practice.

Based on this preliminary assessment, Scenario 1 appears to be the most plausible land-use scenario in the absence of the proposed project activity. A full demonstration of additionality following Step 2 and 3 is provided below to confirm whether Scenario 1 remains the only viable scenario once economic and non-economic constraints are taken into account,

Step 2. Investment analysis

In accordance with Step 2 of the VT0001 Tool, the purpose of the investment analysis is to determine whether the proposed project activity, in the absence of revenues from the sale of GHG credits, would be economically or financially less attractive than at least one of the alternative land-use scenarios identified in Step 1.

Under Sub-step 2a of VT0001, the Project proponent must determine whether a simple cost analysis (Option I), an investment comparison analysis (Option II), or a benchmark analysis (Option III) is applicable.

For the proposed Project activity (Scenario 4), the implementation of a conservation-oriented land-use scenario does not generate any direct financial or commercial revenues other than those derived from the sale of carbon credits. While the Project aims to deliver significant social and livelihood co-benefits for local communities, these benefits do not constitute financial returns to the project proponent and cannot offset project implementation and operational costs in the absence of carbon finance.

The Project does not aim to produce marketable timber, agricultural commodities, or any other income-generating outputs under a non-VCS implementation. Therefore, in accordance with VT0001 Sub-step 2a, the simple cost analysis (Option I) is the appropriate investment analysis method.

Under Option I, the project activity incurs significant implementation and operational costs (including concession management, monitoring, community engagement, safeguards and governance) while producing no financial benefits other than VCS-related income. As such, Options II (investment comparison analysis) and III (benchmark analysis) are not applicable.

Consistent with VT0001, where Option I applies and a simple cost analysis alone cannot differentiate the proposed project activity from alternative land-use scenarios, the demonstration of additionality proceeds through the Barrier Analysis (Step 3).

Step 3. Barrier analysis

The barrier analysis is undertaken in accordance with Step 3 of VT0001. Its purpose is to determine whether the proposed project activity (Scenario 4 – a Conservation Forest Concession, CFC, involving community participation) faces barriers that would prevent its implementation in the absence of revenues from GHG credits, and whether at least one alternative land-use scenario not face these barriers and therefore remains feasible without carbon finance.

Sub-step 3a. Identifying barriers that would prevent the implementation of the type of proposed project activity

A detailed analysis shows that the conservation-oriented Project activity (Scenario 4) faces several significant and overlapping barriers, financial, institutional, technological, ecological and socio-cultural, that would prevent its implementation in the absence of carbon revenue. These barriers do not prevent the continuation of Scenario 1, which constitutes a low-input, subsistence-based livelihood system requiring no formal governance, capital or technical structure.

Investment/economic barriers

Forest conservation concessions and REDD+ activities in the DRC do not generate any commercial revenues in the absence of carbon finance. Unlike industrial concessions, conservation concessions do not produce marketable timber or agricultural commodities. Historical evidence from existing conservation titles indicates that such initiatives have only been implemented where external, non-commercial financing (donor support, grants, or carbon finance) was available.

Without carbon revenue, the costs of establishing and managing concession conservation, including baseline surveys, forest monitoring, community engagement, implementation of livelihood-improvement activities, governance structures, and compliance systems—cannot be recovered.

In contrast, Scenario 1 requires no financial investment, relies on low-input subsistence agriculture and artisanal extraction, and therefore remains viable without external financing

Institutional & Governance barriers

The forest governance context in the DRC presents structural institutional constraints that directly hinder the implementation of formal, regulated land-use systems such as conservation concessions (Scenario 4), CFCLs (Scenario 2) or industrial CCFs (Scenario 3). These barriers are widely documented and stem from longstanding governance challenges that affect the translation of the legal framework into operational reality.

First, institutional capacity is extremely limited. Forest administration staff are concentrated in Kinshasa, while provincial and territorial authorities, who are responsible for day-to-day supervision, lack personnel, training, logistical means and operational budgets. This situation reduces the State's ability to oversee formal management systems such as conservation concessions or CFCLs.

Second, law enforcement is weak. Forest infractions frequently result in informal settlements ("transactions") rather than judicial proceedings, which undermines deterrence and prevents the maintenance of a controlled and regulated concession environment. Access to official information (permits, harvest volumes, compliance documentation) is fragmented across agencies and rarely publicly available, further weakening transparency and accountability.

Third, policy implementation is inconsistent and poorly coordinated. Although the DRC has a comprehensive legal framework, including the 2002 Forest Code, REDD+ regulations, and community forestry decrees, implementation on the ground remains limited. Intersectoral coordination is weak: forestry, agriculture, mining and transport agencies operate in parallel, creating contradictory pressures on land. Participatory governance mechanisms required under conservation and REDD+ frameworks (consultations, community involvement, grievance systems) remain largely underdeveloped due to lack of guidance, financing and technical support.

Fourth, financial and operational constraints hinder sustainable forest management. Local administrations and communities rarely possess the technical, financial or logistical resources necessary to develop and implement formal management plans. The dominance of the informal timber sector, estimated to account for 80–90% of timber production, reflects this structural inability to enforce formal management standards.

These conditions create a governance environment in which establishing a conservation forest concession (Scenario 4), a CFCL (Scenario 2) or an industrial CCF (Scenario 3) is highly constrained, costly and operationally risky in the absence of carbon finance or external support. Conservation concessions, in particular, require strong institutional backing, predictable enforcement, and transparent land governance, all of which are currently lacking.

By contrast, Scenario 1 (continuation of pre-project land use) operates precisely in areas where formal governance is weak. Subsistence agriculture and artisanal extraction do not require administrative oversight, formal permits, or structured governance systems. Scenario 1 remains entirely feasible under the existing institutional conditions and therefore is not impeded by the institutional barriers that prevent the implementation of the proposed project activity.

Technological barriers

The implementation of a conservation concession and REDD+ activities requires specific technical inputs, equipment and infrastructure that are largely unavailable in the PA. Several technological barriers would prevent the project activity from being implemented without carbon revenues.

First, there is limited access to planting materials and quality seedlings needed to support forest restoration, enrichment planting, agroforestry systems or community livelihood alternatives. Local nurseries are scarce or non-functional, and transport constraints make it difficult to source high-quality material from outside the province.

Second, the equipment necessary for sustainable forest management and monitoring is generally unavailable or unaffordable. This includes nursery tools, measurement and inventory equipment, protection gear, transport means for forest patrols, and basic materials required to implement conservation activities. Without external financing, neither local communities nor local authorities are able to acquire or maintain these tools.

Third, the infrastructure required for the implementation of conservation activities is largely absent. The PA has poor road access, limited storage and processing facilities, and virtually no operational infrastructure to support forest management, community development, or surveillance. These deficiencies make it technically difficult and costly to implement activities such as forest monitoring, controlled harvesting alternatives, or restoration programs.

Fourth, local technical capacity is limited. Few technicians or forestry specialists are available in the PA, and local organizations lack the training required to implement forest inventories, manage nurseries, or apply sustainable forest management techniques. Training programs would be needed but cannot be financed without carbon revenues.

These technological limitations constitute material barriers that directly prevent the implementation of Scenario 4 in the absence of carbon finance. By contrast, Scenario 1 (continuation of subsistence

agriculture and artisanal extraction) does not require any specialized equipment, technical inputs or infrastructure, and is therefore not constrained by these technological barriers.

Barriers due to prevailing practice

In the Lisala region and more broadly in Mongala province, prevailing land-use practices are dominated by subsistence agriculture, shifting cultivation and small-scale informal resource extraction. These activities constitute the customary and economically accessible modes of land use and require neither formal management plans nor monitoring systems.

Conservation-oriented forest concessions do exist in the DRC, but they have only been implemented where external, non-commercial financing, principally carbon finance or donor support was available. There is no example in Mongala, nor in comparable provinces, of a conservation concession functioning sustainably without revenues from carbon credits or substantial external funding.

As a result, conservation concessions financed without carbon revenues are not part of prevailing practice in Mongala. Their implementation requires a level of formal organization, management capacity and long-term financing that is entirely absent from the dominant land-use systems observed in the region. The proposed project therefore represents a first-of-its-kind activity in the area outside the context of carbon finance, and would not emerge under current economic and institutional conditions without VCS revenues.

In contrast, Scenario 1 (continuation of pre-project land use) fully aligns with prevailing practice in the region, relying on subsistence agriculture and artisanal extraction that require neither external financing nor formal management structures. Scenario 1 is therefore not constrained by this barrier.

Barriers due to local ecological conditions

The ecological conditions in the Lisala area create significant constraints for the implementation of a structured conservation concession. These conditions increase operational costs, reduce predictability, and require technical interventions that cannot be financed without carbon revenues.

First, the natural forest in the region is characterized by a dense, humid and structurally complex tropical canopy, with thick undergrowth, lianas and mixed-age stands. This high-density forest structure significantly increases the technical difficulty and cost of conservation operations, including forest inventories, biodiversity assessments, patrols, restoration work and installation of monitoring plots. Access into forest blocks is often limited to narrow footpaths, which become impassable during the rainy season, requiring additional equipment and logistical support.

Second, hydrological conditions present persistent challenges. The territory contains extensive hydromorphic soils and areas subject to seasonal flooding due to the proximity of the Congo River and its tributaries. Flood variability, waterlogging and poor drainage complicate field operations, restrict access for monitoring teams, and reduce the feasibility of establishing permanent conservation infrastructure or planned restoration interventions.

Third, land-use pressures linked to slash-and-burn agriculture exacerbate ecological fragility. Declining soil fertility pushes households to clear new forest areas after a few years of cultivation, contributing to

increased forest fragmentation. This dynamic creates a shifting mosaic of degraded and regenerating lands, making landscape-level conservation more technically complex and substantially more costly.

Together, these ecological constraints create a substantial barrier for the proposed conservation concession, which relies on planned restoration, controlled resource management and continuous ecological monitoring. Such interventions require sustained technical expertise, specialized equipment, and long-term financing that are not available without carbon revenues.

In contrast, Scenario 1 (continuation of pre-project land use), based on low-input shifting cultivation and small-scale extraction, is already adapted to these ecological and hydrological conditions. It does not require access to dense forest interiors, nor the establishment of permanent infrastructure, and therefore is not impeded by these barriers.

Barriers due to social conditions and land-use practices

Social conditions and prevailing land-use practices in the Lisala Project Area create significant barriers to the implementation of a structured conservation concession with formal community participation. These barriers increase transaction costs, undermine long-term engagement, and complicate the establishment of coordinated land management without external financing.

First, land tenure insecurity, stemming from the coexistence of customary and statutory systems, complicates any attempt to formalize land management. Most households access land through customary rights, while statutory law vests ownership in the State. This duality generates overlapping claims, weakens tenure security, and discourages engagement in long-term, regulated land-use systems such as a conservation concession. Establishing Scenario 4 requires negotiated agreements, clear rights and stable governance—conditions that cannot be created without dedicated resources and facilitation.

Second, poverty, limited basic services and poor connectivity constrain community engagement in long-term conservation. With very limited road access and reliance on river transport, the cost of organizing consultations, governance meetings, or monitoring activities is high. Households tend to prioritise short-term livelihood needs over participation in a long-term conservation framework.

Third, social vulnerability reduces labour availability and limits participation in structured governance. Women, youth and marginalized groups often have weaker land claims, limited capital, and constrained decision-making power, making inclusive governance, as required in a conservation concession, particularly challenging.

Fourth, dominant land-use practices (slash-and-burn agriculture and artisanal extraction) are deeply rooted and adapted to local socio-economic conditions. Transitioning from these systems to a regulated conservation regime requires major behavioural change, alternative livelihood development, and continuous support.

Finally, weak local land governance and competing claims frequently generate conflicts or limit coordination between groups. Establishing a unified management system for a conservation concession requires stable governance mechanisms and conflict-resolution structures that do not exist in the area.

Taken together, these social and land-use barriers make Scenario 4 highly unlikely to be implemented without carbon finance. Scenario 1, by contrast, aligns naturally with existing social dynamics, requires

no formal governance or long-term institutional arrangements, and is therefore not constrained by these barriers.

Barriers related to local tradition

Traditional systems in the Lisala area introduce additional barriers to the establishment of a structured conservation concession, particularly one requiring formal agreements, documentation and inclusive governance.

First, customary land-tenure and resource-use norms frequently conflict with statutory procedures. Local communities rely on customary authorities for land access and decision-making; formalizing land-use rules, boundaries or management plans may be perceived as overriding these norms, triggering resistance or lack of cooperation.

Second, the area features significant ethnic and cultural plurality (e.g., Ngombe, Doko and others), each with its own customary norms. These differences complicate the establishment of unified community governance structures, which are required for a conservation concession. Customary leadership does not always align with administrative structures, creating risks of exclusion or contestation.

Third, generational change and erosion of traditional authority further complicate governance. While elders rely on traditional norms, younger generations increasingly refer to external influences, creating differing expectations. Aligning these dynamics with formal REDD+ procedures (participatory mapping, FPIC, grievance mechanisms) is challenging without external facilitation and sustained engagement.

Fourth, traditional norms related to roles, gender and participation may restrict the involvement of women, youth or marginalized groups. Conservation concessions require inclusive processes, often incompatible with cultural norms unless dedicated sensitisation and support are provided.

Fifth, traditional systems often operate in parallel to the formal state, with limited integration. Communities may trust customary leaders more than government authorities, and interventions perceived as external may face resistance. Establishing the legitimacy of a conservation concession requires extensive time and financial resources.

Finally, oral transmission of customary knowledge complicates formal documentation of land-use agreements, benefit-sharing mechanisms or conflict-resolution processes, core requirements for a REDD+/conservation concession.

These traditional and cultural dynamics significantly impede the feasibility of Scenario 4 in the absence of external financing and facilitation. Scenario 1, relying on customary land access, informal norms and traditional resource-use practices, operates entirely within existing sociocultural systems and is therefore unaffected by these barriers.

Barriers related to land tenure, ownership, inheritance, and property rights

Land tenure and property rights in the DRC, and particularly in Mongala, create substantive barriers to the establishment of a conservation concession requiring formal land-use agreements, documented rights, and long-term security of tenure.

First, the dual land tenure system, in which customary and statutory frameworks coexist, creates persistent uncertainty. Most land in rural areas is governed under customary law and managed by traditional chiefs, while statutory law (notably the 1973 Land Law) vests ownership in the State. These systems often contradict each other, resulting in unclear boundaries, overlapping claims and frequent disputes over land use and resource access. Establishing a conservation concession therefore requires significant negotiation, formalization and conflict management, costs that cannot be covered without external financing.

Second, state ownership of all land and the requirement to obtain usage rights add complexity. Conservation concessions must secure rights through formal procedures with provincial and national authorities, which is difficult in a context where administrative processes are lengthy, inconsistently applied and often hindered by institutional inefficiencies.

Third, weak land administration and governance amplify these challenges. Land registration offices are under-resourced, records are incomplete or outdated, and the responsibilities of different ministries (land affairs, environment, mining, rural development) frequently overlap. This fragmentation increases the risk of conflicting allocations and reduces the certainty needed for long-term conservation investment.

Fourth, limited legal awareness and barriers to accessing justice undermine the ability of communities and local stakeholders to engage in formalized land management. Many rural households are unfamiliar with legal land procedures, and judicial avenues for resolving land disputes are often inaccessible, costly or perceived as biased. This reduces the feasibility of negotiating and formalizing the agreements required for a conservation concession.

These land-tenure barriers significantly constrain the implementation of Scenario 4, as a conservation concession requires clear and uncontested rights, documented agreements with local communities, and predictable tenure conditions. In contrast, Scenario 1 (continuation of pre-project land use) operates entirely within customary practices and informal tenure arrangements. Subsistence agriculture and artisanal resource extraction do not require formal titles or documented agreements and therefore are not hindered by these land-tenure barriers.

Sub-step 3.b Demonstration that identified barriers would not prevent the implementation of at least one alternative land-use scenario

The barriers identified in Sub-step 3a do not affect all alternative scenarios equally. In accordance with VT0001, any land-use scenario that is prevented by these barriers must be excluded from the set of plausible baseline alternatives. The analysis clearly shows that, in addition to the scenario 4 (as demonstrated in 3.a), scenarios 2 and 3 are not viable under existing conditions, while Scenario 1 remains fully viable in the absence of carbon finance.

<u>Scenario 1 – Continuation of pre-project land use (BAU small-scale agriculture)</u>

Scenario 1 corresponds to the continuation of existing livelihood practices such as subsistence agriculture, shifting cultivation and small-scale informal extraction. These activities:

- require no formal planning, no approved management plan, and no administrative authorization;

- operate entirely with traditional, low-input techniques and are therefore unaffected by technological or financial constraints;
- function within a governance environment characterized by weak enforcement, where informal access and customary arrangements dominate;
- are already adapted to local ecological conditions (acidic soils, hydromorphic zones, seasonal flooding);
- fully align with prevailing practice in Mongala and the historical land-use dynamics observed since the cessation of industrial operations.

Accordingly, none of the identified barriers prevent Scenario 1 from being implemented. Scenario 1 therefore remains a viable land-use alternative in the absence of carbon finance.

Scenario 2 – Reallocation of the abandoned concession as a Community Forest Concession (CFCL)

Scenario 2 is rendered non-viable by multiple barriers identified in Sub-step 3a:

- Institutional and governance barriers: CFCLs require a community governance body, a formally approved management plan, and regular reporting, capacities that are absent in local communities and poorly supported by provincial administrations.
- Technological barriers: Inventory work, mapping, monitoring, and sustainable management techniques require technical inputs that communities cannot mobilize without external assistance.
- Financial barriers: Experience from other provinces shows that CFCLs cannot cover operational and monitoring costs without donor, NGO or carbon-finance support.
- Social and tenure barriers: Overlapping customary claims and intra-community land conflicts make it difficult to establish the unified, legally compliant governance structure required for a CFCL.

Given these constraints, Scenario 2 cannot be implemented under current conditions and must therefore be excluded from the set of plausible baseline alternatives.

Scenario 3 – Resumption of industrial forest operations under a new private concessionaire (CCF)

Scenario 3 is also prevented by the following several barriers:

- Economic barriers: The withdrawal of the previous concessionaire demonstrates that industrial logging is not profitable. Timber volumes and species composition do not justify the high costs of re-establishing operations.
- Technological and infrastructural barriers: Industrial operations require transport infrastructure, mechanized equipment and processing capacity, all absent in the PZ.
- Institutional barriers: Weak enforcement, administrative unpredictability and limited oversight increase operational risk and deter private investment.

Therefore, Scenario 3 is not viable without significant external investment and is eliminated from further consideration.

In summary, the barrier analysis shows that Scenario 2 (CFCL) and Scenario 3 (industrial concession) cannot be implemented under current institutional, financial and technical conditions and must therefore be excluded. By contrast, Scenario 1, continuation of pre-project subsistence activities, remains fully

viable and consistent with existing socio-economic and ecological dynamics. The VT0001 requirement that at least one alternative scenario remain viable in the absence of the Project is therefore met. Scenario 1 is consequently the only plausible baseline alternative after completion of the barrier analysis.

Step 4. Common practice analysis

In accordance with VT0001 Step 4, this section assesses whether activities similar to the proposed Project have been widely implemented within the geographical area of the Project during the 10 years preceding the project start date. The purpose of this step is to determine whether the proposed activity is common practice in the region or not.

Sub-step 4.1 Identification of similar activities in the region

Across Mongala province and the wider northern forest block, land-use dynamics over the last decade have been dominated by small-scale subsistence agriculture (shifting cultivation), informal artisanal timber harvesting, fuelwood and charcoal production, and limited industrial logging within the few remaining concessions. Occasional donor-supported community initiatives exist but are small scale and short lived. These activities represent the prevailing land-use system, but none correspond to a structured conservation concession with formal long-term management, community governance systems, monitoring obligations, and legally defined conservation objectives.

Sub-step 4.2 Existence of similar conservation projects

Over the past ten years, a small number of conservation or REDD+ initiatives have been implemented in other regions of the DRC. However:

- *none are located in Mongala Province;*
- *none operate under the tenure model of a Conservation Forest Concession (CFC);*
- *and none provide evidence of long-term implementation without sustained external financing.*

Conservation concessions in the DRC remain rare, and those allocated prior to the 2022–2023 national forest title review were either cancelled or suspended, indicating that this tenure model has not demonstrated sustained operational viability in practice.

Sub-step 4.3 Assessment of essential distinctions

Even where some forest conservation projects exist elsewhere in the country, they are not comparable to the proposed project due to several essential distinctions:

- Different land tenure model: Most existing conservation initiatives rely on protected area legislation or donor-driven temporary agreements, not on a conservation concession obtained through a formal contractual process with the State.
- Different financing structure: Existing initiatives have been funded through donors, NGOs, or carbon finance. Without such external support, conservation activities have not persisted.
- Different governance conditions: Areas where conservation projects have occurred typically benefit from higher institutional presence, NGO support, or international partnerships.

- Different implementation capacity: Conservation projects implemented in more accessible regions cannot be replicated under the ecological, infrastructural, and governance constraints of Mongala without carbon revenues.
- Lack of historical precedent in the PZ: No conservation concession, REDD+ project, or structured conservation management has ever operated in the PA.

These distinctions demonstrate that the proposed project activity, if implemented without registration under a carbon standard, is not comparable to any existing initiatives in the region and therefore cannot be considered common practice.

The evidence presented above further demonstrates that no conservation concession comparable to the proposed project (without carbon credit revenues) has been implemented or sustained in Mongala Province or within PA over the past ten years. Existing conservation projects in other regions of the DRC operate under substantially different tenure conditions, financing structures, governance arrangements and institutional support, and therefore cannot be considered analogous. Within the PZ, prevailing land uses consist almost exclusively of informal, small-scale and subsistence-oriented activities, which bear no resemblance to the structured conservation model proposed by the Project.

On this basis, the proposed activity cannot be considered common practice and therefore meets the requirements of Step 4 of the VT0001 Additionality Tool. The project is therefore additional.

3.1.6 Methodology Deviations (VCS, 3.20)

There is no methodology deviation.

3.2 Quantification of Estimated GHG Emission Reductions and Removals

3.2.1 Baseline Emissions (VCS, 3.15)

3.2.1.1 Reference Region for Deforestation (RRD) and Leakage Belt (LB)

In line with the requirements of module BL-UP (v3.3) under the VM0007 framework methodology, two zones were delineated to establish the project's baseline scenario: a RRD, used to project the baseline deforestation rate, and a LB, designed to monitor potential displacement of deforestation activities induced by project implementation.

The RRD covers a total area of 353,806 ha, which is 2.39 times larger than the Lisala PA (148,183 ha), thereby meeting the minimum area ratio criterion defined in the methodology (RRD ≥ 7500*PA-0.7=1.8).

The LB covers 141,026 ha, equivalent to 95% of the PA, also complying with the minimum size threshold (LB ≥ 0.9 × PA).

Both zones lie entirely outside the PA boundary. The RRD includes only forested land as of the start of the historical reference period (i.e. 2014), while the LB, located adjacent to the PA, also comprises exclusively forested areas as of the project start date (2025).

Similarity Criteria

Main Agents of Deforestation

The main drivers of deforestation in the Lisala PA, the RRD, and the LB are homogenous and consist predominantly of rural households engaged in low-input, extensive subsistence agriculture. Communities rely on traditional slash-and-burn practices, generating small plots for cassava, maize, and groundnut production. Agricultural activities are supplemented by fishing, hunting, and the collection of NTFPs, primarily for household consumption and limited local trade (Rapport socio-économique Lisala, 2017). Livestock keeping is marginal, restricted to household-level husbandry of poultry, goats, and pigs. No large-scale ranching activities exist, and animal grazing contributes negligibly to forest conversion.

The main ethnic groups living in and around the PA, RRD, and LB are Ngombe, Mbudja, and Ngbaka, who are long-term residents primarily engaged in shifting agriculture.

There are no agro-industrial concessions, commercial plantations, or mining projects within to the PA, RRD, or LB. The deforestation risk is therefore exclusively linked to household subsistence agriculture, confirming the representativeness of the RRD and LB for the PA.

The local population operate under customary rights without formal land titles. The majority of households are long-term residents (>5 years), with only limited seasonal migration (DRC Living Income Update, 2022). This demographic stability ensures comparability between PA, RRD, and LB in terms of agent composition.

Landscape Factors

The forest composition in the Lisala PA is dominated by tropical dense forest (139,415 ha; ~94%) and tropical swamp forest (8,768 ha; ~6%) . The RRD and LB exhibits a similar distribution (around 95% dense forest and 5% swamp forest), ensuring ecological representativeness.

Soils across the three zones are dominated by Ferralsols (PA: 88%; RRD: 87%; LB: 80%), with a secondary presence of Gleysols (PA: 12%; RRD: 13%; LB: 20%). These soil types were identified from the SOTERCAF database and are characteristic of deeply weathered soils of the Congo Basin. Given that the main agents of deforestation practice subsistence, rainfed slash-and-burn agriculture without drainage infrastructure, the presence of Ferralsols is a relevant factor for agricultural suitability. Gleysols, are generally not converted to agriculture under local conditions due to their poor drainage and the absence of large-scale land improvements.

Topographic features, derived from the Copernicus/SRTM DEM (30 m resolution), indicate slopes predominantly <15%. Ratios between gentle (<15%) and steep slopes (≥15%) are 10.3 in the PA, 8.5 in the RRD, and 8.9 in the LB.

Elevation is uniform across all three zones, with >99% of the area lying below 500 m. This homogeneity implies similar climate and hydrological conditions (Copernicus DEM, 2018).

Factors of Accessibility

A review of hydrological features identified one navigable river located at the boundary between the PA and the LB, but none within the PA itself. Aside from this feature, accessibility is provided only by small tributaries and local footpaths, which are comparable across zones (OSM, 2023).

Road density is low and consistent across the three zones. In the PA, road density ranges between 0.14 and 0.155 km/km², depending on the buffer considered. The RRD shows a density of 0.142 km/km², while the LB exhibits a slightly higher density of 0.169 km/km² (OSM, 2023).

Settlement density, calculated from Copernicus GHSL data (2015, 30 m resolution), is also rural and low across all zones. Densities are 0.06 km²/km² in the PA, 0.054 km²/km² in the RRD, and 0.071 km²/km² in the LB.

Institutional and Social Context

All three zones, the PA, the RRD, and the LB, are located within Lisala Territory, Mongala Province, and are subject to the same national and provincial regulations on land use, forest governance, and natural resource management.

There are no differentiated land-use plans, infrastructure developments, or external drivers such as mining operations, agro-industrial concessions, or logging concessions that affect one zone disproportionately.

Consultations with local communities and customary authorities confirm the absence of armed groups, inter-ethnic tensions, or major social conflicts that could drive divergent patterns of forest use across zones.

Furthermore, no part of the PA, RRD, or LB includes areas designated for planned deforestation.

Table 42 - Comparison of similarities criteria between PA, RRD, and LB

Criterion	PA	RRD	LB	RRD Diff vs PA	LB Diff vs PA
Surface area (ha)	*148,183*	*353,806*	*141,026*	*138%*	*–4.8%*
Forest Type					
Proportion of Dense Forest (%)	*94*	*94.9*	*94.5*	*+0.9%*	*+0.5%*
Proportion of Swamp Forest (%)	*6*	*5.1*	*5.5*	*–15%*	*–8.3%*

Main soil type suitable for land use practices					
Ferralsols	*88*	*87*	*79.8*	*–1.1%*	*–9.3%*
Topography					
Gentle slope (<15%) / steep slope (≥15%) ratio	*10.3*	*8.5*	*8.9*	*–17.4%*	*–13.6%*
Elevation class < 500m (%)	*100*	*99*	*99*	*–1%*	*–1%*
Accessibility					
Road density (km/km²)	*0.14*	*0.14*	*0.16*	*≈0%*	*+14 .3%*
Settlement density (km2/km²)	*0.06*	*0.054*	*0.071*	*–10%*	*+18.3%*
Navigable waterway	*Not present*	-	-	-	-

3.2.1.2 Reference Regions for Location (RRL)

The RRL was delineated in accordance with the requirements of module VM0007 (BL-UP v3.3) to model the spatial allocation of baseline deforestation. The RRL was defined as a single, contiguous spatial unit encompassing the PA and the LB, with an additional 1 km buffer applied to ensure that the region contained sufficient forest area relative to the RRD.

At the beginning of the historical reference period (2014), the RRL covered a total area of 585,830 ha, of which 99,648 ha were classified as non-forest (i.e. 17%) satisfying the requirement of a minimum of 5% non-forest area. By the start of the baseline period (2025), the forest area within the RRL was estimated at 438,715 ha. This represents a difference of +24% relative to the area of the RRD, which falls within the range of ±25%.

The geometric configuration of the RRL was defined as a single parcel, fully encompassing the PA and LB, with the buffer extending slightly into adjacent areas of the RRD. This ensures environmental and socio-economic comparability between the RRL and the zones it overlaps.

Since the RRL fully encompasses the PA and the LB, as well as a portion of the RRD, the similarity criteria, including forest composition, soil types, slope ratios, road density, and settlement density, are by definition consistent with those of these three zones. This configuration ensures that the RRL is representative for the spatial allocation of deforestation risk

3.2.1.3 Estimation of Annual Areas of Unplanned Deforestation Based on Simple Historic Approach

Forest Cover Benchmark Map

To quantify the historical unplanned deforestation rate within the RRD, the project followed Step 2.1 of BL-UP v3.3 (VM0007). A consistent and validated dataset was used to map forest and non-forest cover over at least 10 years until 12 years.

The analysis used the Tropical Moist Forest (TMF) dataset developed by the JRC, which provides annual forest/non-forest classifications across the world tropical regions at 30 m resolution from 1990–2024 (Vancutsem et al., 2020). TMF products include internal cloud-screening and quality control, ensuring <10% misclassification due to cloud cover. For project, forest cover data were extracted for 11 consecutive years (2014–2024), ensuring:

- Temporal coverage: the last date (2024) falls within two years of the project start (2025).
- Spatial resolution: 30 m, within methodological thresholds.
- Consistency: all layers derived using the same algorithm, allowing robust inter-annual comparison.

Forest masks were produced by reclassifying TMF into binary forest/non-forest according to the national forest definition of the DRC (≥0.5 ha, ≥3 m height, ≥30% canopy cover). A sieve filter of 6 connected pixels (~0.54 ha) was applied to meet the minimum mapping unit. Annual masks represent forest status as of 31 December each year.

To meet VM0007 accuracy requirements (≥90%), the project commissioned an independent accuracy assessment for the years 2020 and 2024. The assessment followed Olofsson et al. (2014) best practices using stratified random sampling across stable forest, stable non-forest, and deforestation strata, with reference data from PlanetScope (5 m) composites and Google Earth historical imagery.

Table 43 - Accuracy assessment results of the forest cover benchmark dataset (2020 & 2024)

Year	Overall Accuracy (OA)	User's Accuracy (Forest)	Producer's Accuracy (Forest)	User's Accuracy (Non-Forest)	Producer's Accuracy (Non-Forest)
2020	*0.97 (95% CI: 0.95–0.98)*	*0.97*	*0.99*	*0.96*	*0.91*
2024	*0.96 (95% CI: 0.95–0.98)*	*0.96*	*0.99*	*0.97*	*0.89*

Mapping of Deforestation

Annual gross deforestation maps were derived by overlaying successive binary forest masks (year n vs year n−1). Pixels classified as forest in year n−1 and non-forest in year n were flagged as deforested. This produced a consistent time series of gross deforestation maps for 2014–2024.

Annual deforestation was then aggregated at the RRD level (ha/year), producing the historical time series for the reference period. Annual deforested areas (ha/year) in the RRD are summarized below:

Table 44 - Annual deforestation in the RRD (2015–2024)

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Observed deforestation (ha, RRD)	*6 243*	*3 370*	*4 871*	*5 772*	*3 177*	*3 420*	*2 654*	*2 022*	*1 942*	*1 478*	*2 482*

Estimation of Annual Areas of Unplanned Baseline Deforestation in the RRD

According to the module BLUP and given the availability of 11 deforestation time points, a linear regression model was tested to determine whether deforestation showed a statistically significant trend over time.

The following linear regression was tested:

$$ABSL^{RRD}{}_{,unplanned,t} = m \times t + int$$

where t is the number of years since the start of the historical period (t = 1 for 2014).

And the following regression results were obtained:

- Intercept = 5,758 .25(p-value < 0.001, statistically significant***)
- Slope = −392.57 (p-value < 0.002, statistically significant**)
- p-value (overall model) = 0.0018 (≤0.05, statistically significant*)
- R^2 = 0.68

The slope is negative and statistically significant (p< 0.05), indicating a decreasing trend in deforestation. Accordingly, and consistent with methodological requirements, the statistically significant decreasing linear regression is retained for baseline projection. In consequence, the modeled baseline deforestation in the RRD over 6 years of the first validity baseline period (i.e. 2025–2030) is summarized in the table below:

Table 45 - Modeled annual deforestation in the RRD (2025–2030)

Year	2025 (t=1)	2026 (t=2)	2027 (t=3)	2028 (t=4)	2029 (t=5)	2030 (t=6)

Deforestation (ha, RRD modeled)	*5 366*	*4 973*	*4 581*	*4 188*	*3 795*	*3 403*

Estimation of Annual Areas of Unplanned Baseline Deforestation in the RRL

As the Project applies a spatial allocation model, values modeled for the RRD were scaled to the RRL according to forest area ratios at the baseline starting year (i.e. 2025) to the total area of the RRD:

- Forest in RRL = 438,715 ha
- Total Area of RRD = 353,806 ha
- Ratio = Forest in RRL / Forest in RRD = 1.24

Thus, each year's modeled deforestation in the RRD was multiplied by 1.24 in order to obtain yearly deforestation projected in the RRL.

Table 46 - Projected annual deforestation in the RRL (2025–2030)

Year	2025	2026	2027	2028	2029	2030
Deforestation (ha, RRL scaled)	*6 653*	*6 167*	*5 680*	*5 193*	*4 706*	*4 219*

3.2.1.4 Location And Quantification Of Threat Of Unplanned Deforestation

Model Calibration

To Project the likely spatial distribution of future unplanned deforestation within the RRL, the project developed a spatial risk model in accordance with Steps 3.1–3.3 of BL-UP v3.3 (VM0007). The objective was to generate a deforestation risk map that can be used to allocate the annual baseline deforestation estimated in previous section across the RRL.

The modeling approach relied on a Random Forest (RF) classifier implemented in Python. RF is a widely used, peer-reviewed, and non-proprietary algorithm that meets methodological expectations. It is particularly suitable for land-use change modeling because it accommodates non-linear relationships, is robust to noisy data, and provides an explicit measure of the importance of each predictor variable.

Eight spatial predictor variables were selected, covering the four thematic categories required by the methodology:

Table 47 - Predictor variables used in modeling risk map of deforestation (2025–2030)

Thematic class	Predictor variable	Data source / resolution
Landscape features	*Elevation, slope, peatland presence*	*Copernicus/SRTM DEM 30 m (2018); Creeze (2023) for peatland maps*
Accessibility	*Distance to roads, distance to settlements*	*OpenStreetMap (2024); GHSL (2015)*
Anthropogenic influence	*Distance to forest, distance to prior deforestation*	*JRC-TMF (2013–2019, 30 m)*
Land management status	*Presence of logging concessions*	*MEDD – Atlas forestier RDC*

All input layers were harmonized to a common spatial resolution of 30 m and clipped to the RRL extent. The 2014–2019 TMF forest transition maps were used to identify valid transition pixels (forest to non-forest) and persistence pixels (stable forest). A total of 365,250 deforestation pixels and 6,193,507 persistence pixels were available. To avoid imbalance in training, a balanced random sample of 150,000 pixels per class was used to calibrate the RF model.

Variable Importance

The Random Forest analysis identified the following relative contributions to model performance:

- Distance to forest : 36.3%
- Proximity to areas already deforested : 24.7%
- Distance to roads: 9.92%
- Elevation (DEM): 10.05%
- Distance to settlements: 9.77%
- Slope: 8.27%
- Logging concession presence: 0.6%
- Peatland presence: 0.34%

These results are consistent with known land-use dynamics in the Congo Basin, where deforestation typically expands from forest edges and previously cleared land, and is facilitated by proximity to settlements and transport axes. Landscape variables (slope, elevation) exert secondary effects, while peatlands and concessions were of limited influence, reflecting their marginal role in smallholder-driven deforestation in Lisala.

Model validation

In accordance with BL-UP requirements to test multiple model specifications, several alternative models were evaluated prior to selecting the final deforestation risk map. These alternative specifications included (i) Random Forest models using different subsets and combinations of predictor variables, (ii) Random Forest models tuned with multiple parameter settings, and (iii) a Generalized Linear Model (GLM) using a binomial logistic link function. Each model generated a candidate risk map that was then used to simulate deforestation during the confirmation period (2020–2024). The predictive accuracy of each candidate model was assessed using the Figure of Merit (FOM). The Random Forest model incorporating the complete set of eight predictors yielded the highest FOM score while maintaining parsimony and was therefore selected as the final model used for baseline allocation.

Models was validated using independent data from the 2020–2024 period, which comprised 167,015 observed transition pixels. The continuous risk output was converted to a binary prediction by selecting the same number of pixels with the highest predicted risk. Predicted deforestation was then compared against observed deforestation, and accuracy was assessed using the Figure of Merit (FOM) (Pontius et al., 2011).

The selected model (i.e. the one with the highest FOM) correctly predicted 39,367 transitions, corresponding to a FOM of 13.36%. This value is well above the minimum threshold of 4.47% required by BL-UP (derived from the net deforestation rate in the calibration period).

Mapping of the Location of Future Deforestation

In accordance with Step 3.4.2 of Module BL-UP (VM0007 v3.3), future baseline deforestation was spatially allocated within the RRL using the validated deforestation risk model. As required, deforestation was assumed to occur first in the pixel locations with the highest modeled risk values, and the total selected area each year was constrained to the projected baseline deforestation area.

The allocation process followed these steps:

- From the Deforestation Risk Map, the pixels with the highest deforestation probability were selected until their cumulative area matched the annual baseline deforestation area for Year 1 (2025). The resulting raster constitutes the Baseline Deforestation Map – Year 1 (i.e. 2025).
- The procedure was repeated for each subsequent year of the baseline period (2026–2030), with the model dynamically updated to account for annual changes in forest edges and previously cleared areas. Each year's selection produced a corresponding Baseline Deforestation Map – Year t.
- All yearly maps were compiled to create a Cumulative Baseline Deforestation Map representing expected deforestation pressure over the entire 6-year first validity baseline period (2025-2030) and overlap with project and leakage area and forest stratification.

Annual results were summarized in the table below showing the number of hectares projected to be deforested each year in the PA and the LB under the baseline scenario.

Table 48 - Annual deforestation allocated by forest type and zone (PA dense/swamp, LB dense/swamp), 2025–2030

Year	PA – Dense Forest (ha)	PA – Swamp Forest (ha)	LB – Dense Forest (ha)	LB – Swamp Forest (ha)
2025	*1637*	*0*	*2704*	*1*
2026	*1513*	*1*	*2587*	*2*
2027	*1585*	*0*	*2185*	*0*
2028	*1416*	*1*	*1878*	*1*
2029	*1370*	*1*	*1789*	*2*
2030	*1238*	*1*	*1508*	*1*

3.2.1.5 Stratification Of the project area

Stratification of Forest

For the purpose of aboveground biomass (AGB) estimation, the PA was stratified following the procedures of Module VMD0016 v1.3 (X-STR). Two forest strata were delineated:

- Tropical Swamp Forest, and
- Tropical Dense Forest.

This classification was based on the most recent regional peatland maps (Creeze, 2022), land cover analysis, and field observations. The distinction between swamp and dense forests is ecologically justified, as these ecosystems differ markedly in hydrology, floristic composition, and expected biomass density. From a carbon accounting perspective, this separation ensures more accurate and conservative estimates of carbon stocks.

Following the forest inventory, plot-level above-ground biomass estimates were compared to the overall project mean using the ±20% threshold defined in VMD0016. While individual plots exceeded this threshold, deviations occurred in both directions and were spatially dispersed across the PA. The spatial distribution of outlying plots does not form any discrete cluster representing more than 10% of the total sample. Consequently, no unidentified stratum was detected and no post-hoc adjustment of the stratification was required.

The current stratification is therefore considered both ecologically robust and methodologically compliant and is retained as the operational basis for aboveground biomass estimation in the PA.

Table 49 - Project stratification by forest type (dense vs. Swamp)

Stratum	Area (ha)	% of PA
Tropical dense forest	*139 415*	*94 %*
Tropical swamp forest	*8 768*	*6 %*

Total	*148 183*	*100%*

Stratification of Peatland based on Peat Thickness and PDT Calculation

Although the Project is not required to apply the peatland accounting procedures, because peat-related emissions within the PA are demonstrated to be de minimis relative to total baseline emissions, the project proponents nevertheless conducted a full peat stratification analysis. This was done to transparently demonstrate that peatland emissions have a negligible influence on the baseline and to confirm that treating peat as de minimis.

In compliance with VMD0016, the PA was stratified into units of relatively homogeneous GHG emission characteristics using a combination of land-use/cover, peat thickness, and Peat Depletion Time (PDT) as stratification proxies. Areas projected to undergo deforestation under the baseline scenario, as derived from the BL-UP module, were delineated as distinct strata for peat-emissions accounting, since land-use change is the primary driver of peat carbon loss.

Peat thickness data were sourced from the median peat depth map developed by Crezee et al. (2022), the most comprehensive dataset currently available for the Congo Basin. To ensure conservative estimates, all peat depth values were reduced by 50 cm in accordance with VMD0016 guidance, which recommends applying an uncertainty discount of up to 50 cm to account for potential mapping errors, coarse woody debris, and subsidence risks.

Corrected peat thickness values were then used to calculate the Peat Depletion Time (PDT) for each pixel by dividing the adjusted depth by a conservative peat subsidence rate of 5 cm/year, the upper bound reported in the literature for drained tropical peatlands and explicitly referenced in VMD0016.

Areas with corrected peat thickness below 50 cm were reclassified as mineral soils and excluded from peat carbon accounting. A raster map of PDT was generated from the corrected thickness values, and PDT values. Following this classification, strata were divided into (i) areas where peat would be fully depleted within the crediting period and (ii) areas where peat persists beyond the crediting period.

The analysis shows that peat covers only a very small part of the PA and does not intersect any pixels projected to be deforested in the baseline scenario. Peat emissions are therefore considered de minimis.

3.2.1.6 Estimation of Forest carbon stock

Above-Ground Biomass (AGB)

Above-ground biomass was estimated from forest inventory data collected within rectangular plots measuring 200 m × 25 m, established along a straight transect. The layout was carefully aligned using compass bearings and GPS control, with corrections applied for slope when necessary to ensure that the

effective plot area corresponded to its nominal size. Markers were placed at 0 m, 40 m, 100 m and 200 m to delimit sub-plot boundaries.

Each plot was subdivided into three sub-plots defined by increasing diameter thresholds so that all size classes of trees were adequately represented. Trees with a diameter at breast height (DBH) equal to or greater than 10 cm were measured from 0 to 40 m, those ≥ 20 cm from 40 to 100 m, and those ≥ 40 cm from 100 to 200 m. The effective sampling width was 25 m (12.5 m on each side of the central line). This progressive threshold design optimizes effort allocation across diameter classes and reduces measurement bias linked to the abundance of small stems near the transect origin.

Tree diameters were measured over bark at 1.30 m above the ground, following the standard DBH conventions described in the inventory protocol, with adjustments for leaning, irregular or buttressed trees. Total height was measured on a subsample and, when required, estimated for the remaining individuals using locally derived height–diameter relationships. For every tree, the field team recorded at least the species, DBH, height, stem quality and health condition.

Only live trees were considered in the computation of above-ground biomass. Dead individuals, as identified in the field under the "health status" category, were excluded from this pool and accounted for separately under dead-wood components.

Individual above-ground biomass (AGB, in kilograms) was estimated from diameter and wood density using the allometric equation proposed by Chave et al. (2005) for humid tropical forests, without height as a predictor:

$$AGB = \rho \times exp(-1.499 + 2.148 * (lnD) + 0.207 * (lnD)^2 - 0.0281 * (lnD)^3)$$

where D is the DBH in cm and ρ the wood density in g cm^{-3}. When species-specific wood density information was available, it was used directly from Global Wood Density Database (Zane, et al. 2008); otherwise, a conservative default value of 0.60 g cm^{-3} was applied to maintain consistency across plots.

Because each diameter class is associated with a specific sampling length, the contribution of each tree was weighted by the effective area of the sub-plots in which it was eligible for inclusion. The area of each sub-plot corresponds to its length multiplied by the plot width (25 m), expressed in hectares. The eligible area of a tree is therefore the sum of all sub-plot areas for which its diameter equals or exceeds the threshold of that band. An individual's contribution to stand-level biomass is obtained by dividing its AGB (in t) by its eligible area (ha). Summing the contributions of all live trees provides the total AGB per plot, expressed in t ha^{-1}. This weighting ensures that estimates remain unbiased despite the variable minimum DBH across sub-plots.

Field quality assurance relied on a standardized control system. Transects were carefully aligned and slope-corrected; field teams were trained to standardize diameter measurement procedures; and repeat measurements were performed. Each record was checked for internal consistency before data compilation. The set of recorded variables (species, DBH, height, health) was retained in a structured format to ensure traceability.

Plot-level AGB values (t dry matter ha^{-1}) were then averaged by stratum and aggregated at the project scale. Sampling uncertainty was expressed as a 95 % confidence interval, following classical statistical formulas consistent with the sample design. Above-ground biomass in tonnes of dry matter per hectare have been converted to tonnes of carbon per hectare by applying a carbon fraction of 0.47 and then converted to tonnes of CO_2 equivalent per hectare using the molecular-weight ratio 44/12.

As result, a total of 59 sample plots were processed for the estimation of above-ground biomass (AGB) using the sub-plot approach defined in the Lisala inventory protocol. Each plot measured 25 m in width and was subdivided into three bands of 40 m, 60 m, and 100 m in length, corresponding to minimum DBH thresholds of 10 cm, 20 cm, and 40 cm, respectively (Table 9-1). These thresholds and dimensions yielded cumulative sampled areas of 0.10 ha, 0.25 ha, and 0.50 ha per plot, ensuring consistent scaling across tree size classes.

During processing, the health filter excluded all trees identified as dead, resulting in 3 676 (valid live-tree records retained from an initial 3 797. No trees had missing DBH values or fell below the 10 cm inclusion threshold, confirming full completeness of the dataset for AGB computation.

For dense forest class, the analysis produced an average AGB of 285.4 t d.m. ha^{-1} in a [257 – 313] 95% confidence Interval under normal (Student) assumptions. The bootstrap resampling (10,000 iterations) produced a similar interval of [257 – 313 t d.m. ha^{-1}], confirming the robustness and internal consistency of the estimates.

For swamp forest class, the analysis produced an average AGB of 218.4 t d.m. ha^{-1} in a [133 – 305] 95% confidence Interval under normal (Student) assumptions. The bootstrap resampling (10,000 iterations) produced a closer interval of [147.5 – 298.2 t d.m. ha^{-1}], confirming the robustness and internal consistency of the estimates.

After conversion using a carbon fraction of 0.47 and a molecular-weight ratio 44/12, the mean of AGB corresponds to 491.8 tCo2 ha^{-1} for dense forest and 376.4 tCo2 ha^{-1} for swamp forest, consistent with the expected magnitude for mature moist tropical forests under similar conditions.

Table 50 - Sampling parameters used for AGB estimation

Parameter	Value
Plot width (m)	*25.0*
Band lengths (m)	*40, 60, 100*
DBH thresholds (cm)	*10, 20, 40*
Area per band (ha)	*0.10, 0.15, 0.25*
Cumulative area (ha)	*0.10, 0.25, 0.50*
Health filter	*Excluded: Dead*
Trees below DBH threshold	*0*
Missing DBH values	*0*

Table 51 - Summary statistics for above-ground biomass in dense forest

Statistic	Value
Number of plots	*53*
Mean AGB (t d.m. ha $^{-1}$)	*285.4*
Standard deviation (t d.m. ha $^{-1}$)	*103.8*
Standard error (t d.m. ha $^{-1}$)	*14.3*
95% CI (normal/Student)	*[257.4, 313.3]*
95% CI (bootstrap, 10,000 resamples)	*[257.7, 313.3]*
Relative uncertainty (%)	*9.8*
CARBON FRACTION (CF)	*0.47*
MEAN CARBON STOCK (t C ha $^{-1}$)	*134.1*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha $^{-1}$)	*491.8*

Table 52 - Summary statistics for above-ground biomass in swamp forest

Statistic	Value
Number of plots	*6*
Mean AGB (t d.m. ha $^{-1}$)	*219.4*
Standard deviation (t d.m. ha $^{-1}$)	*105.5*
Standard error (t d.m. ha $^{-1}$)	*43*
95% CI (normal/Student)	*[133.3, 305.6]*
95% CI (bootstrap, 10,000 resamples)	*[147.5, 298.2]*
Relative uncertainty (%)	*39.2*
CARBON FRACTION (CF)	*0.47*
MEAN CARBON STOCK (t C ha $^{-1}$)	*103.1*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha $^{-1}$)	*378*

Below-Ground Biomass (BGB)

Below-ground biomass was estimated indirectly from above-ground biomass using a root-to-shoot ratio approach. This approach was selected because destructive sampling of roots was not feasible within the PA, and reliable empirical relationships between above- and below-ground biomass exist for tropical forests of similar ecological conditions (IPCC, 2006).

For each sampling plot where above-ground biomass (AGB) had been estimated, below-ground biomass (BGB) was calculated as a fixed proportion of AGB according to the equation:

$$BGB = R\ x\ AGB$$

where (R) represents the Root-to-Shoot ratio. Based on IPCC (2006) for humid tropical forests, a value of R = 0.24 was applied.

The BGB value derived for each plot thus represents the biomass contained in all below-ground living parts of trees.

The same sampling units and stratification used for AGB were retained for BGB. For each stratum, mean AGB and its associated uncertainty were propagated to BGB through the linear relationship defined above. Because the root-to-shoot ratio is applied as a constant factor, the relative uncertainty of BGB equals that of AGB, while the absolute values are scaled by 0.24.

The resulting below-ground biomass per plot (t dry matter ha^{-1}) was then averaged by stratum and aggregated at the Project level. Confidence intervals (95 %) were calculated from the plot-level variability of AGB and expressed for BGB using the same statistical basis.

For carbon accounting, BGB values expressed in tonnes of dry matter per hectare were converted to tonnes of carbon per hectare using a carbon fraction of 0.47, and to tonnes of CO_2 equivalent per hectare using the molecular-weight ratio 44/12, in full alignment with the REDD+ carbon-stock reporting framework.

Accordingly, for dense forest, given the mean AGB value of 285.4 t d.m. ha^{-1}, the corresponding below-ground biomass was calculated as:

$$BGB = 0.24\ x\ AGB_{dense} = 68.5\ t.d.m.ha^{-1}$$

The 95 % confidence interval was propagated proportionally from AGB confidence interval [257.4 - 313.3], maintaining the same relative uncertainty:

$$BGB_{95\%CI} = 0.24\ x\ AGB_{dense,95\%CI} = [61.8\ ;75.2]$$

In a same way, for swamp forest, the below-ground biomass is estimated:

$$BGB = 0.24\ x\ AGB_{swamp} = 52.7\ t.d.m.ha^{-1}$$

With 95 % confidence interval which was propagated proportionally from AGB from swamp forest resulting in:

$$BGB_{95\%CI} = 0.24\ x\ AGB_{swamp,95\%CI} = [32\ ;73.3]$$

Thus, the mean below-ground biomass across all plots is estimated at 68.5 t.d.m. ha^{-1} for dense forest, with an uncertainty of approximately ±9.8 % (95 % CI), consistent with the variability observed in above-ground biomass and 52.7 t.d.m. ha^{-1} for swamp forest with an uncertainty of 39.2 % (95% CI).

For carbon accounting, the mean BGB was converted to carbon and CO_2 equivalent resulting respectively to 118 tCo2 ha-1 and 90.8 tCo2 ha^{-1} for dense and swamp forests respectively.

Table 53 - Summary statistics for below-ground biomass (BGB) for dense forest

STATISTIC	VALUE
Root-to-Shoot Ratio	*0.24*
MEAN BGB (t d.m. ha $^{-1}$)	*68.5*
95% CI (NORMAL)	*[61.8 – 75.2]*
RELATIVE UNCERTAINTY (%)	*9.8*
CARBON FRACTION (CF)	*0.47*
MEAN CARBON STOCK (t C ha $^{-1}$)	*32.2*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha $^{-1}$)	*118*

Table 54 - Summary statistics for below-ground biomass (BGB) for swamp forest

STATISTIC	VALUE
Root-to-Shoot Ratio	*0.24*
MEAN BGB (t d.m. ha $^{-1}$)	*52.7*
95% CI (NORMAL)	*[32.1 – 73.2]*
RELATIVE UNCERTAINTY (%)	*39.2*
CARBON FRACTION (CF)	*0.47*
MEAN CARBON STOCK (t C ha $^{-1}$)	*24.8*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha $^{-1}$)	*90.8*

Dead Standing Wood (DSDW)

The estimation of carbon stocks in dead standing wood followed the methodological module VMD0002 v1.1 (Estimation of Carbon Stocks in the Dead Wood Pool – Step 1) and applied the procedures described in the Lisala inventory protocol. This pool includes all standing trees identified as dead at the time of the inventory.

During field measurements, the health status of each tree was systematically recorded. Only trees explicitly classified as “dead” were included in the dead standing wood pool. These individuals were then assigned to two decomposition classes based on observable structural characteristics:

- Class 1 – Low decomposition: trees retaining the general structure of a live tree, with bark and branches still largely intact, showing little or no decay;
- Class 2 – Intermediate to advanced decomposition: trees lacking branches or crown, showing visible decay, loss of bark, or partial collapse of the stem.

For each dead standing tree, the following measurements were taken:

- Diameter at breast height (DBH, cm) when measurable on the main stem;

- Stem height (m), when possible, corresponding to the height of the remaining bole;
- Degree of decay and rotting condition, recorded according to the three-class system (sound = 1, intermediate = 2, rotten = 3).

These data were recorded on the same 200 m × 25 m plots used for living biomass, maintaining the same sub-plot structure (0–40 m, 40–100 m, 100–200 m) with respective minimum diameter thresholds of 10 cm, 20 cm, and 40 cm. Each dead tree was therefore associated with the same eligible sampling area as a live tree of equivalent size, ensuring consistent scaling to a per-hectare basis.

Two calculation approaches were applied depending on the decomposition class:

- Class 1 (Low decomposition): The biomass of trees in this class was estimated using the same Chave et al. (2005) allometric model as for live trees, applying the appropriate wood density (ρ). This approach is justified by the relatively intact structure of these trees, which still resemble live individuals.
- Class 2 (Intermediate/Advanced decomposition): For trees with significant decay or loss of structure, biomass was derived from the stem volume and the corresponding dead-wood density (DDWdc), according to the following formulas:

$$B_{SDWl,j,sp,i} = \frac{1}{3} * \pi * \left(\frac{BDia_{SDWl,sp,i}}{200}\right)^2 * H_{SWDl,sp,i} * D_{DWdc}$$

with $BDia$: Basal diameter of standing dead tree l from sample plot/point sp in stratum i; $H_{SWDl,sp,i}$: Height of standing dead tree l from sample plot/point sp in stratum i; m ; D_{DWdc} : Mean wood density of dead wood in the density class (dc) – sound (1), intermediate (2), and rotten (3); t d.m. m-3; sp = 1, 2, 3, … Pi sample plots/points in stratum l, i = 1, 2 strata dense and swamp forest.

In some cases the height of Class 2 trees could not be measured due to field conditions. In such instances, those trees were excluded from the volume calculation. This treatment is conservative, as it avoids overestimation of biomass for individuals with uncertain dimensions.

The dead-wood density (DDWdc) for each tree was derived from the species-specific live-wood density (ρ) multiplied by a density reduction factor assigned to the rot (decay) class, following Harmon & Sexton (1996) and CDM methodological guidance (Tool EB58 Annex 14):

- Sound wood = 1.00 × ρ
- Intermediate decay = 0.80 × ρ
- Rotten wood = 0.45 × ρ

When species-specific live-wood density values were unavailable, a default value of ρ = 0.60 t d.m. m^{-3} was applied. This default corresponds not only to an IPCC-consistent value, but also closely matches the mean of the species-specific live-wood densities of tree species observed alive within the PA, based on the project's forest inventory and wood-density database.

Each dead tree's contribution to biomass per hectare was calculated by dividing its individual biomass (in tons of dry matter) by the eligible plot area corresponding to its diameter class. Plot-level totals were

obtained by summing all individual contributions. For plots without dead standing trees, values were recorded as zero to ensure consistent coverage of the full sampling set.

$$B_{SDWi} = \frac{1}{A_{sp,i}} * \sum_{sp=1}^{Pi} \sum_{i=1}^{N_{sp,i}} B_{SDWsp,i}$$

Where: BSDWi = Mean biomass of standing dead wood in stratum i; t d.m. ha-1; $BSDWsp,i$ = Biomass of standing dead wood in sample plot sp in stratum i; t d.m.; Asp,i = Total area (ha) of all sample plots in stratum i; Nsp,i = Number of standing dead trees in sample plot sp of stratum i ; sp = 1, 2, 3, … Pi sample plots/points in stratum I, i = 1, 2 strata dense and swamp forest.

Average dead standing wood biomass (t d.m. ha^{-1}) and its 95 % confidence interval were computed from the distribution across all plots. Uncertainty was expressed in percent as the half-width of the confidence interval divided by the mean.

Finally, the biomass of dead standing wood was converted to carbon using a fraction of 0.47, and then to CO_2 equivalent using the molecular-weight ratio 44/12.

The estimation of dead standing wood biomass (BSDW) was conducted on the same 59 inventory plots (53 in dense forest and 6 in swamp forest) used for live biomass assessment.

Across the 59 plots analyzed, 28 plots (47%) contained measurable dead standing trees, while 31 plots (53%) contained none or lacked sufficient height data for biomass estimation.

The mean biomass of dead standing wood was estimated at 8 t d.m. ha^{-1} in dense terra firme forest and 7.6 t d.m. ha^{-1} in swamp forest. The corresponding 95% confidence intervals were [4.0 – 12.0 t d.m. ha^{-1}] and [0.9 – 14.4 t d.m. ha^{-1}] under normal assumptions, and [4.4 – 12.3 t d.m. ha^{-1}] and [2.2 – 13.9 t d.m. ha^{-1}] under bootstrap resampling (10,000 iterations). Relative uncertainties reached 50% and 89%, respectively, reflecting the sparse and uneven distribution of deadwood among plots.

Plot-level BSDW values ranged from 0 to approximately 40 t d.m. ha^{-1}, with most non-zero plots below 20 t d.m. ha^{-1}.

After conversion using a carbon fraction of 0.47, the mean BSDW corresponds to approximately 3.8 t C ha^{-1} (13.8 t CO_2e ha^{-1}) on average across all plots, applying the 44/12 molecular weight ratio. Stratified results indicate 3.77 t C ha^{-1} (13.8 t CO_2e ha^{-1}) for dense terra firme forest and 3.60 t C ha^{-1} (13.1 t CO_2e ha^{-1}) for swamp forest.

Table 55 - Summary statistics for dead standing wood (BSDW) in dense forest

Statistic	Value
Number of plots	*53*
Plots with BSDW > 0	*28*
Plots with BSDW = 0	*25*
Mean BSDW (t d.m. ha^{-1})	*8*
95% CI (normal)	*[4– 12]*

95% CI (bootstrap, 10,000 resamples)	*[4.37 – 12.26]*
Relative uncertainty (%)	*50*
Carbon fraction (CF_DW)	*0.47*
MEAN CARBON STOCK (t C ha $^{-1}$)	*3.8*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha $^{-1}$)	*13.8*

Table 56 - Summary statistics for dead standing wood (BSDW) in swamp forest

Statistic	Value
Number of plots	*6*
Plots with BSDW > 0	*6*
Plots with BSDW = 0	*0*
Mean BSDW (t d.m. ha $^{-1}$)	*7.6*
95% CI (normal)	*[0.9 – 14.4]*
95% CI (bootstrap, 10,000 resamples)	*[2.2– 13.9]*
Relative uncertainty (%)	*88.7*
Carbon fraction (CF_DW)	*0.47*
MEAN CARBON STOCK (t C ha $^{-1}$)	*3.6*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha $^{-1}$)	*13.1*

Dead Lying Wood (DLW)

Dead lying wood was quantified using the line-intersect sampling approach on the same inventory plots used for living biomass. Within each 200 m × 25 m plot, two perpendicular transects of 50 m were established, for a total transect length of L = 100 m per plot. All downed woody pieces intersecting the transect lines with minimum diameter ≥ 10 cm were tallied. For each intersected piece, the diameter at the point of intersection (cm) was measured, and the rot (decay) class was assigned using a three-class system (sound = 1, intermediate = 2, rotten = 3) based on visual and tactile indicators consistent with tropical-forest deadwood guidance.

Plot-level volume per hectare of dead lying wood was estimated by decay class using the standard Van Wagner/Warren–Olsen formulation, which relates the sum of squared intercept diameters to volume density along the transect:

$$V_{ldwi} = \frac{\pi^2 * (\sum_{n=1}^{N} Dia_{dc,n,i}{}^2)}{8 * L}$$

where Dia are intercept diameters in centimetres and L is the total transect length in metres (I.e. 100m); n = 1, 2, 3, … N sequence number of wood pieces in density class dc intersecting the transect; ί = 1, 2

strata dense and swamp forest. The formulation incorporates the area conversion so that results are directly expressed in m^3 ha^{-1}.

Because tree species were not identified for lying dead wood, the mean DDW values calculated for standing wood and forest type were applied as representative densities for downed dead wood. These values, derived as the product of species-specific live-wood density and rot-class reduction factors (1.00, 0.80, 0.45), reflect the local composition and decomposition conditions observed in the inventory.

Accordingly, the following mean DDW values were used:

- *Dense terra firme forest: 0.65 t d.m. m^{-3} (sound), 0.49 t d.m. m^{-3} (intermediate), 0.26 t d.m. m^{-3} (rotten);*
- *Swamp forest: 0.58 t d.m. m^{-3} (sound), 0.46 t d.m. m^{-3} (intermediate), 0.25 t d.m. m^{-3} (rotten)*

Total DLW biomass per plot was the sum across decay classes. Plots with no qualifying intersections (i.e., no pieces ≥ 10 cm) were assigned to a value of zero, ensuring complete coverage of the sample frame and avoiding upward bias.

Stratum-level statistics were obtained by averaging plot-level DLW biomass (t d.m. ha^{-1}) and reporting 95% confidence intervals based on plot-to-plot variability. Uncertainty was expressed in percent as the half-width of the confidence interval divided by the mean. Conversions to carbon used a carbon fraction of 0.47 and to CO_2 equivalent applied the molecular-weight ratio 44/12.

Accordingly, measurements were conducted on the same 59 inventory plots used for standing biomass assessment (53 in dense terra firme forest and 6 in swamp forest). Biomass was estimated as a mean DLW biomass of 38.4 t d.m. ha^{-1} (95% CI [22.5 – 54.3 t d.m. ha^{-1}]) for dense terra firme forest and 37.8 t d.m. ha^{-1} (95% CI [7.02 – 68.48 t d.m. ha^{-1}]) for swamp forest. Bootstrap resampling (10,000 iterations) produced similar confidence intervals of [24.6 – 55.8] and [16.3 – 68.2] t d.m. ha^{-1}, respectively. Relative uncertainties were 41.4% and 81.4%.

After applying a carbon fraction of 0.47, the average DLW stock corresponds to 18 t C ha^{-1} (66.2 t CO_2e ha^{-1}) in dense terra firme forest and 17.7 t C ha^{-1} (65.1 t CO_2e ha^{-1}) in swamp forest.

Table 57 - Summary statistics for dead lying wood (DLW) in dense forest

Statistic	Value
Number of plots	*53*
Transect length per plot (m)	*100*
Minimum diameter threshold (cm)	*10*
Mean BLDW (t d.m. ha^{-1})	*38.4*
95% CI (normal)	*[22.5 – 54.3]*
95% CI (bootstrap, 10,000 resamples)	*[24.6 – 55.8]*
Relative uncertainty (%)	*41.4*
Carbon fraction (CF_DW)	*0.47*
MEAN CARBON STOCK (t C ha^{-1})	*18*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha^{-1})	*66.2*

Table 58 - Summary statistics for dead lying wood (DLW) in swamp forest

Statistic	Value
Number of plots	*6*
Transect length per plot (m)	*100*
Minimum diameter threshold (cm)	*10*
Mean BLDW (t d.m. ha $^{-1}$)	*37.8*
95% CI (normal)	*[7 – 68.5]*
95% CI (bootstrap, 10,000 resamples)	*[16.3 – 68.2]*
Relative uncertainty (%)	*81.4*
Carbon fraction (CF_DW)	*0.47*
MEAN CARBON STOCK (T C Ha $^{-1}$)	*17.8*
Molecular WEIGHT (CO2/C)	*44/12*
MEAN CO_2 EQUIVALENT (t CO_2e ha $^{-1}$)	*65.1*

3.2.1.7 Estimation of post-deforestation carbon stocks

To determine post-deforestation carbon stocks in the baseline scenario, the Project applies Option 1 (Simple Approach) of VM0007, which requires selecting a representative post-deforestation land-use class based on the most common and likely land uses observed in areas deforested during the historical reference period.

Analysis of land cover transitions between 2014 and 2024 in the Reference Region demonstrates that deforested areas predominantly converted to small-scale subsistence agriculture, characterized by cyclical land-use systems involving short cultivation periods, fallow phases, and gradual regeneration by woody vegetation. This land-use trajectory is consistent with national assessments and is explicitly recognized in the Forest Reference Emission Level (FREL) of the DRC (2018), which identifies “Culture et Régénération de Culture Abandonnée” (CRCA) as the dominant post-deforestation land cover class.

The CRCA class encompasses active cultivation, fallow lands, and early stages of secondary forest regrowth, with vegetation typically ranging from 3 to 15 m in height and dominated by heliophilous pioneer species. Because this system is inherently cyclical, its long-term carbon stock is represented by the time-weighted average across the entire cultivation–fallow cycle.

According to the FREL RDC (2018), the average long-term carbon stocks for CRCA are:

- Aboveground biomass (AGB): 24.01 tDM/ha
- Belowground biomass (BGB): 8.89 tDM/ha

These nationally validated values were adopted as the conservative post-deforestation carbon stocks across the PA and LB during the crediting period. No alternative post-deforestation land uses were identified as being either more representative or associated with higher carbon stocks; hence, CRCA provides an appropriate and conservative proxy under VM0007.

3.2.1.8 Estimation of Carbon Stock Changes

In accordance with the requirements of module VMD0007 (BL-UP v3.3), carbon stock changes resulting from deforestation are calculated as the difference between pre-deforestation forest carbon stocks and post-deforestation carbon stocks, stratified by forest type.

In the Project, three terrestrial carbon pools are considered:

- Aboveground tree biomass (AGB), and
- Belowground tree biomass (BGB).
- Deadwood (DWB)

Other optional pools, such as aboveground non-tree biomass, litter, and mineral soil organic carbon, have been excluded from accounting, as they were optional and assessed as negligible.

The change in carbon stock for each stratum i was calculated as:

$$\Delta C^{AB}_{,tree,i} = C^{AB}_{,tree,\beta sl,i} - C^{AB}_{,tree,post,i}$$

$$\Delta C^{BB}_{,tree,i} = C^{BB}_{,tree,\beta sl,i} - C^{BB}_{,tree,post,i}$$

$$\Delta CDW_{,tree,i} = CDW_{,tree,\beta sl,i} - CDW_{,tree,post,i}$$

Where:

$C^{AB}_{,tree,\beta sl,i}$ Aboveground tree biomass in the forest state for stratum i (tC/ha),

$C^{AB}_{,tree,post,i}$: Aboveground biomass after deforestation (CRCA land use) for stratum i (tC/ha),

$C^{BB}_{,tree,\beta sl,i}$: Belowground biomass in the forest state for stratum i (tC/ha),

$C^{BB}_{,tree,post,i}$: Belowground biomass after deforestation (CRCA land use) for stratum i (tC/ha).

$CDW_{,tree,\beta sl,i}$: Dead wood biomass in the forest state for stratum i (tC/ha),

$CDW_{,tree,post,i}$: Dead wood biomass after deforestation (CRCA land use) for stratum i (tC/ha) (0)

For all included pools, carbon stocks were converted to tonnes of CO_2 equivalent using the molecular weight ratio of 44/12.

3.2.1.9 Estimation of the sum of baseline carbon stock changes

To estimate baseline emissions resulting from unplanned deforestation, carbon stock changes were calculated for each forest stratum by applying the emission factors defined previously and multiplying them by the spatially explicit areas of projected deforestation. The result represents the total annual baseline emissions attributable to forest carbon stock loss in the absence of the project activity.

In accordance with the provisions of VM0007 (BL-UP v3.3), only the aboveground tree biomass (AGB), belowground biomass (BGB) and deadwood carbon pools were included in the calculation. Other optional terrestrial pools, such as aboveground non-tree biomass, litter, mineral soil organic carbon, and harvested wood products, were excluded on the basis of a conservative justification that their contribution is de minimis in the context of the local post-deforestation land-use system.

For aboveground biomass, all carbon stock changes are assumed to be instantaneously emitted in the year of deforestation:

$$\Delta C^{BsL}_{i,t},^{AGB} = A_{unplanned,i,t} \times \Delta C^{AB}_{,tree,i}$$

For belowground biomass and dead wood, the methodology requires that emissions be released progressively over a 10-year period, at a rate of 10% per year. Accordingly, cumulative BGB and DW emissions in year t were calculated as:

$$\Delta C^{BsL}_{i,t},^{BGB} = \Sigma_{(k=t-9)}^{(t)} A_{unplanned,i,k} \times (\Delta C^{BB}_{,tree,i} / 10)$$

$$\Delta C^{BsL}_{i,t},dw = \Sigma_{(k=t-9)}^{(t)} A_{unplanned,i,k} \times (\Delta Cdw_{,tree,i} / 10)$$

Where:

$A_{unplanned,i,k}$: Area of unplanned deforestation in stratum i in year t, determined through the spatial modeling process;

$\Delta C^{BB}_{,tree,i}$ and $\Delta Cdw_{,tree,i}$: Carbon stock change in belowground biomass and dead wood for stratum i.

The total baseline emissions for each year and stratum are then the sum of instantaneous AGB emissions and delayed BGB emissions:

$$\Delta C^{BsL}_{i,t} = \Delta C^{BsL}_{i,t},^{AGB} + \Delta C^{BsL}_{i,t},^{BGB} + \Delta C^{BsL}_{i,t},dw$$

3.2.1.10 Estimation of baseline greenhouse gas emissions from wetlands SOC pool

In line with VMD0016 (Section 4.4.2), the Project applied the Stock Loss Approach to assess baseline GHG emissions from peat soils. Default emission factors from the IPCC 2014 Wetlands Supplement were used, as no site-specific measurements of subsidence or peat carbon density were available.

The default emission factor of 14 t C ha^{-1} yr^{-1} was applied, equivalent to: 14 × (44/12) = 51.3 t CO_2 ha^{-1} yr^{-1}

However, the baseline deforestation model (BL-UP) shows that no peatland pixels are projected to be deforested under the baseline scenario. Consequently:

- $A^{BsL}_{i,t}$ = 0 for all peat strata
- No drainage or peat oxidation would occur in the baseline
- Therefore, baseline peat emissions are equal to zero

Given that:

$$C_i^{loss} = A_{i,t}^{BSL} \times PDT_i \times 51.3 = 0$$

A significance test (see Test of Significance Annex) further confirms that peat emissions would represent less than 5% of the net GHG impact of the Baseline and are therefore de minimis. Peat emissions are thus excluded from the GHG accounting boundary.

3.2.1.11 Estimation of the sum of other baseline greenhouse gas emissions

In accordance with Step 4.5 of Module VMD0007 (BL-UP v3.3), the baseline scenario may optionally include additional GHG emissions associated with deforestation activities, including fossil fuel combustion, non-CO_2 emissions from biomass burning, and direct N_2O emissions from agricultural practices following land clearing. For the Project, fossil fuel emissions and post-clearing agricultural N_2O emissions are negligible due to the dominance of manual, low-input subsistence agriculture. These sources are therefore conservatively excluded from the baseline, consistent with VM0007 guidance.

However, non-CO_2 emissions from biomass burning are included, since slash-and-burn agriculture constitutes the principal land-clearing practice driving unplanned deforestation in the region.

n the baseline scenario, unplanned deforestation is primarily caused by smallholder shifting cultivation. This land-use system involves manual clearing followed by the use of fire to remove aboveground biomass. Biomass burning is therefore a relevant and significant non-CO_2 emission source.

In line with Section 4 of Module VMD0013 (v1.3), the module applies to PA where forest land is converted to non-forest land using fire.

Direct mapping of slash-and-burn events is not feasible in the PA because burn scars are typically very small (often less than 2–3 ha), disappear within hours or days due to rapid vegetation recovery or ash dispersal, and are frequently obscured by cloud cover and atmospheric haze typical of humid tropical regions. In addition, available satellite products do not offer sufficient spatial resolution for consistent detection of such small, short-lived events. As a result, wall-to-wall burn-scar mapping would systematically miss most slash-and-burn clearings and would lead to non-conservative estimates.

Although small burn scars cannot be reliably detected, MODIS active fire and burned area products show a high frequency of fire occurrences within and around the PA. These fire detections coincide spatially with zones of anthropogenic pressure and reflect a fire regime typical of smallholder shifting cultivation. MODIS information is therefore used qualitatively as evidence that fire is widely used for land clearing, in accordance with VMD0013, but is not used quantitatively for estimating emissions.

Because burn scars cannot be mapped directly and because slash-and-burn represents the dominant land-clearing method, the project applies a proxy approach whereby the annual area deforested under the baseline scenario is assumed to correspond to the area burned (A_burn,i,t = A_deforestation,i,t). This assumption is justified by field observations and prevailing land-use practices showing that forest-to-cropland conversion is almost always carried out using fire. Biomass burning emissions are calculated only for tropical dense forest, since slash-and-burn is not practiced in swamp or flooded forests; wet soils and inundation conditions prevent combustion, and spatial analyses confirm the absence of burning in these ecosystems

Baseline non-CO_2 emissions from biomass burning are quantified following Section 5.1 of VMD0013, which draws on the IPCC 2006 Guidelines. CO_2 emissions from burning are excluded to avoid double counting, as stock-change methods already account for carbon losses associated with deforestation. For each stratum i and year t, emissions are calculated as:

$$E_{i,t,g}^{biomassburn} = \left[A_{burn,i,t} \times B_{i,t} \times COMF_i \times G_{g,i}\right] \times 10^{-3} \times GWP_g$$

where $A_{(burn,i,t)}$ is the area burned (ha); $B_{i,t}$ is the pre-burn aboveground dry biomass stock (331 t d.m. ha^{-1}); $COMF_i$ is the combustion factor (0.5); $G_{(g,i)}$ are gas-specific emission factors (CH_4 = 6.8 g kg^{-1} d.m., N_2O = 0.2 g kg^{-1} d.m.); and $GWP_{(g)}$ corresponds to IPCC AR6 global warming potentials (CH_4 = 27, N_2O = 273).

These parameters are applied ex-ante to the baseline deforested area for the first baseline validity period. The resulting CH_4 and N_2O emissions are considered under the baseline scenario and are therefore included in the baseline GHG emissions. The same methodology will be applied to the project and leakage scenarios if deforestation and thus biomass burning occurs ex-post.

Table 59 - Non CO2 GHG emissions due to biomass burning in baseline scenario

Years	Area Burnt (ha)	CH4 (tCo2)	N2O (tCo2)	Total Non-Co2 GHG (tCo2)
2025	1 637	49 862	14 828	64 690
2026	1 513	46 085	13 705	59 790
2027	1 585	48 278	14 357	62 635
2028	1 416	43 130	12 826	55 957
2029	1 370	41 729	12 410	54 139
2030	1 238	37 709	11 214	*48 923*

3.2.1.12 Calculation Of Net Emissions

In accordance with Step 4.6 of Module BL-UP (VM0007 v3.3), net baseline greenhouse gas emissions from unplanned deforestation are derived by aggregating carbon stock changes across all strata and years in both the PA and the LB. For the Lisala REDD+ Project, including only AUD (non-wetland) activity, the net baseline emissions from unplanned deforestation are defined as:

$$\Delta C_{BSL,unplanned} = \Delta C_{BSL,PA,unplanned} + GHG_{BSL,E}$$

where $GHG_{BSL,E}$represents other baseline emissions associated with deforestation activities (i.e. non-CO_2 from burning biomass) as described in previous section.

Baseline CO_2 emissions in the PA and LB were obtained by summing annual carbon stock changes over all forest strata (dense and swamp) and all years of the baseline period, using the emission factors defined previously and the projected deforested areas derived from the spatial allocation model:

$$\Delta C_{\text{BSL,PA,unplanned}} = \sum_{i=1}^{M} \sum_{t=1}^{t^*} \Delta C_{\text{BSL,PA},i,t}$$

$$\Delta C_{\text{BSL,LB,unplanned}} = \sum_{i=1}^{M} \sum_{t=1}^{t^*} \Delta C_{\text{BSL,LB},i,t}$$

where $\Delta C_{\text{BSL,PA},i,t}$ and $\Delta C_{\text{BSL,LB},i,t}$ are the annual carbon stock changes (t CO_2e) in stratum i in year t, obtained by combining pre-deforestation forest carbon stocks (AGB, BGB, deadwood) with post-deforestation CRCA stocks, and applying the temporal emission pattern for belowground biomass and deadwood specified in VM0007.

The resulting $\Delta C_{\text{BSL,unplanned}}$ values (t CO_2e) constitute the total baseline emissions against which project scenario emissions will be compared.

Table 60 - Summary of net GHG emissions reduction (ex-ante) in first baseline validity period (2025-2030)

	Calendar year of crediting period	Net GHG emissions in the REDD baseline scenario (tCO_2e)	Net GHG emissions in LB (tCO_2e)
1st Baseline Validity period	*2025*	*832 002*	*1 374 654*
	2026	*799 236*	*1 364 954*
	2027	*863 134*	*1 207 226*
	2028	*806 547*	*1 091 462*
	2029	*809 051*	*1 080 903*
	2030	*767 005*	*970 446*
	Total	*4 876 975*	*7 089 646*

3.2.2 Project Emissions (VCS, 3.15)

In accordance with Section 8.2 of VM0007, project emissions are quantified using the same methodological procedures both ex ante and ex post. Parameters that will be monitored during the

crediting period are estimated ex ante using default values or zero values, as applicable, in line with the parameter tables of the relevant modules.

For the Project, net greenhouse gas emissions in the project scenario are quantified following Module M-REDD. As the project activity consists exclusively of avoided unplanned deforestation in non-wetland forest areas, the applicable equation for net project emissions is:

$$\Delta C_{WPS-REDD} = \sum_{t=1}^{t^*} \sum_{i=1}^{M} \left(\Delta C_{P,DefPA,i,t} + \Delta C_{P,DistPA,i,t} + GHG_{P-E,i,t} \right)$$

Where $\Delta C_{WPS-REDD}$represents the net GHG emissions in the REDD project scenario up to year t^*.

For the Project, all components of this equation are conservatively estimated as zero ex ante, based on the nature of the Project activities and the design assumptions validated in previous sections of the PDD:

- Deforestation in the PA (ΔC_p,DefPA,i,t): The project is designed to fully avoid unplanned deforestation within the PA throughout the crediting period. Under the project scenario, no conversion of forest land to non-forest land is permitted or planned. Therefore, net carbon stock changes due to deforestation in the PA are equal to zero for all strata and all years.
- Natural disturbances (ΔC_p,DistPA,i,t): While natural disturbances may occur stochastically, they are not attributable to project activities and are conservatively excluded from ex-ante project emissions, in accordance with VM0007 guidance. Any such events would be addressed ex post if they materially affect carbon stocks.
- GHG emissions from project activities (GHG_p-E,i,t): Emissions associated with Project implementation, including fossil fuel combustion and other activity-related emissions, are negligible. Project operations rely primarily on manual labor and limited river or road transport, with no use of heavy machinery. As such, GHG emissions from Project activities are conservatively assumed to be zero. In addition, no fertilizer application occurs under the project scenario, resulting in zero direct N_2O emissions.

As a result of the above, net GHG emissions in the project scenario are set ex-ante to zero for all strata and all years of the crediting period:

$$\Delta C_{WPS-REDD} = 0$$

This zero-emission project scenario is conditional on the continued absence of deforestation, and significant activity-related emissions within the PA. All relevant parameters will be monitored during each monitoring period in accordance with VM0007 and Module M-REDD requirements. Should any project-related emissions occur ex post, they will be quantified and deducted accordingly in future verification periods.

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

In accordance with VM0007, the Project applies Module LK-ASU because the activities implemented under the Lisala REDD+ Project may potentially displace land-use activities such as crop expansion or forest clearing to areas outside the PA. Conversely, LK-M (market-effects leakage) does not apply because the project does not reduce any ongoing industrial or commercial wood harvest. Although the former concession was converted to conservation use in 2025, industrial logging had already ceased in 2021 due to lack of profitability. The project therefore causes no reduction in national timber supply and cannot generate market-driven leakage. Accordingly, the following section quantifies potential activity-shifting leakage (LK-ASU).

3.2.3.1 Estimation of Baseline Carbon Stock Changes and GHG Emissions in the Leakage Belt

In line with VMD0010 (v1.2) Module LK-ASU and Module BL-UP, a baseline for the LB of the Project was established using the same methodological approach applied to the PA baseline. The LB covers 141,026 ha, delineated as 95% of the PA, and includes only land that was forested in 2014 and remained forested in 2024. Baseline deforestation within the LB was projected using the spatial allocation model. The table below presents the projected deforested areas for the period 2025–2030 (i.e., the first baseline validity period).

Table 61 - Deforested area in the LB in baseline scenario

Year	Area deforested IN LB (ha)
2025	*2705*
2026	*2589*
2027	*2185*
2028	*1879*
2029	*1791*
2030	*1509*

Carbon stock changes were estimated for above- and below-ground biomass pools, using the same stratification (dense vs swamp forest) and emission factors as defined for the PA.

Average pre-deforestation carbon stocks were derived from field inventory data collected in the PA, resulting in mean aboveground carbon stocks of 492 tCO_2e/ha for tropical dense forest and 378 tCO_2e/ha for swamp forest. Belowground biomass was estimated using a root-to-shoot ratio of 0.24, consistent with IPCC (2006) guidance, leading to total carbon stocks of approximately 118 tCO_2e/ha for dense forest and 91 tCO_2e/ha for swamp forest. The dead wood pool (standing and lying combined) contributes an additional mean stock of approximately 80 tCO_2e/ha in dense forest and 78 tCO_2e/ha in swamp forest. In addition, non-CO_2 emissions from biomass burning (CH_4 and N_2O) associated with slash-and-burn land clearing are estimated and added to the baseline GHG emissions, in accordance with VMD0013.

Following the DRC FREL (2018), post-deforestation land use was conservatively assumed to be cropland/abandoned fallow (CRCA), which represents the long-term equilibrium carbon stock over the

cultivation–fallow cycle. The CRCA class was assigned a conservative average carbon stock of 56.7 tCO_2e/ha, including both above- and below-ground biomass.

Carbon losses from deforestation for below-ground biomass were assumed to occur progressively over a 10-year period, releasing thus 10% of the total biomass carbon per year.

Accordingly, the estimated annual baseline CO_2 emissions resulting from deforestation within the LB are shown in the table below:

Table 62 - ex-ante estimates of emissions from deforestation in the LB in the baseline scenario

Year	Emissions from deforestation in LB in baseline (tcO2)
2025	1 374 654
2026	1 364 954
2027	1 207 226
2028	1 091 462
2029	1 080 903
2030	970 446

3.2.3.2 Estimation of the Proportions of Area Deforested by Immigrant and Local Deforestation Agents in the Baseline

This step determines the proportion of baseline deforestation attributable to long-term resident populations (PROPRES) and to populations that have migrated into the area within the past five years (PROPIMM).

In accordance with the methodological requirements, this assessment was carried out using a Participatory Rural Appraisal (PRA) approach, complemented by available socio-economic studies. Communities located within a 2 km buffer of the PA and LB were randomly sampled, covering more than 10% of all local communities.

Based on the PRA results, approximately 1% of the population consists of recent immigrants, while 99% are long-term resident households (i.e. residing in the area for more than 5 years). Accordingly, baseline deforestation is assumed to be distributed proportionally, with 1% attributed to recent immigrant populations and 99% to long-term residents.

- PROPIMM = 0.01
- PROPRES = 0.99

3.2.3.3 Ex-ante Estimation of Unplanned Deforestation Displaced from the Project Area to the Leakage Belt

In line with VM00010 requirements, an ex-ante estimate of unplanned deforestation potentially displaced from the PA into the LB has been established. The calculation is based on the expected effectiveness of the proposed REDD+ activities in addressing the main drivers of deforestation, such as agricultural expansion.

The project design includes targeted leakage management measures through community-based forest management, support for alternative livelihoods, and promotion of sustainable agricultural practices, intended to substantially reduce the incentive for displaced deforestation. Given these measures, it is assumed that no more than 10% of baseline PA deforestation and associated emissions could be displaced into the LB. This assumption is applied by multiplying the baseline PA emissions by a displacement factor of 0.10 to derive the expected project-case emissions in the LB.

Table 63 - Ex-ante estimates of leakage emissions due to activity shifting from deforestation in LB in the project scenario

Year	Ex-ante Emissions from deforestation in LB in project scenario (tcO2)
2025	*83 200*
2026	*79 924*
2027	*86 313*
2028	*80 655*
2029	*80 905*
2030	*76 701*

These project-case emissions are then combined with the baseline LB emissions to derive the total ex-ante GHG emissions expected within the LB under the project scenario..

Table 64 - Ex-ante estimates of emissions from deforestation in LB in the project scenario

Year	Ex-ante leakage Emissions from deforestation in LB in project scenario (tcO2)
2025	*1 457 854*
2026	*1 444 878*
2027	*1 293 539*
2028	*1 172 117*
2029	*1 161 808*
2030	*1 047 147*

3.2.3.4 Estimation of Unplanned Deforestation Displaced from the Project Area to Outside the Leakage Belt

The objective of this step is to estimate the potential unplanned deforestation and associated emissions that could be displaced from the PA to areas outside the LB by immigrating populations. The calculation relies on three key components defined in VM00010: the national availability of forest land for unplanned deforestation (AVFOR), the proportion of this forest located within the LB (PROPLB), and the relative carbon stock between forests inside versus outside the LB (PROPCS). Together with the estimated share

of baseline deforestation caused by immigrant agents (PROPIMM), these variables allow the estimation of the proportional leakage factor (LKPROP).

National Forest Availability (AVFOR)

The total available national forest area for unplanned deforestation (AVFOR) was derived from the JRC Tropical Moist Forest 2024 dataset, which provides a consistent and recent representation of national forest cover and it is consistent with data used for the delineate forest in PA.

The national forest layer was intersected with a 5 km buffer around roads (OSM, 2023) and navigable rivers (OSM, 2023) to retain only accessible forests suitable for agricultural conversion. Protected areas (PROTFOR) and managed forests (MANFOR) were not excluded, as no verified evidence of effective deforestation prevention was available. This conservative approach results in a total AVFOR of 55.58 million hectares.

Proportional forest in the LB (PROPLB)

The available forest area within the LB (LBFOR) was derived from the LB Forest Cover Benchmark Map (FCBM) established during the baseline analysis. For consistency with AVFOR, no exclusions were applied for PROTFOR/MANFOR. The LB contains 141,026 ha of available forest, representing 0.25 % of the national AVFOR ($PROP_{LB} = 0.0025$).

Proportional carbon stock (PROPCS)

Carbon stock estimates were directly derived from the peer-reviewed ESA CCI Biomass 2022 dataset, which provides spatially explicit, globally consistent estimates of aboveground tree carbon. This approach ensures that the stratification is based on biophysical parameters and supported by robust literature sources, while also capturing the real spatial variability of carbon stocks across the forest of DRC.

The mean aboveground tree carbon stock across AVFOR nationally is 292 t.d.m./ha (eq. 503 tCO_2e/ha), while within the LB it is 303 t.d.m./ha (eq. 522 tCO_2e/ha). The proportional difference of aboveground tree carbon stock between forests inside and outside the LB is therefore PROPCS = 0.96

Proportional leakage (LKprop)

Following equation (5) of VMD00010, the proportional leakage factor (LK_{PROP}) was calculated using:

- *the estimated share of baseline deforestation attributed to immigrating populations ($PROP_{IMM}$, as estimated in step2),*
- *the proportion of available forest in the leakage belt ($PROP_{LB}$) estimated at 0.0025, and*
- *the proportional difference in carbon stocks ($PROP_{CS}$) estimated at 0.96.*

The resulting proportional leakage factor is:

$$LK_{PROP} = PROP_{IMM} * (1 - PROP_{LB}) * PROP_{CS} \approx 0.0096$$

In line with VMD00010, ex ante leakage associated with the displacement of unplanned deforestation to areas outside the LB is estimated as:

$$\Delta C_{LK-ASU,OLB} = \left(\Delta C_{BSL,LK,unplanned} - \Delta C_{P,LB}\right) \times LK_{PROP}$$

Where:

$\Delta C_{LK-ASU,OLB}$ = Net CO_2 emissions due to unplanned deforestation displaced outside the LB up to year t (tCO_2e),

$\Delta C_{BSL,LK,unplanned}$ = Net CO_2 emissions from unplanned deforestation in the LB under the baseline scenario up to year t (tCO_2e),

$\Delta C_{P,LB}$= Net CO_2 emissions from unplanned deforestation in the LB under the project scenario up to year t (tCO_2e),

LK_{PROP}= Proportional leakage factor for areas with immigrating populations (here ≈ 0.0096 for Lisala REDD+ project).

Accordingly, displaced emissions are calculated as the difference between baseline and project emissions within the LB, multiplied by the proportional leakage factor. The table below summarizes ex-ante estimations of annual net CO2 emissions due to unplanned deforestation displaced outside the LB.

.

Table 65 - Ex-ante estimates of leakage emissions from deforestation outside the LB in project scenario

Year	Ex-ante leakage Emissions from deforestation OUTSIDE LB (tcO2)
2025	800
2026	768
2027	830
2028	775
2029	778
2030	737

3.2.3.5 Emissions from Activity Shifting Resulting in Peatland Drainage And Tidal Wetland Degradation

In accordance with the provisions of VMD0010, this step addresses potential activity-shifting leakage onto peatland areas outside the PA, whether within the LB or beyond it.

To estimate potential peatland-related leakage emissions, the project employed the high-resolution peat thickness dataset of Crezee et al. (2022), adjusted by –50 cm to account for potential error of peat depth. Following the guidance of Module VMD0016 (X-STR), all corrected pixels with peat thickness < 50

cm were reclassified as mineral soils, ensuring that only undrained peatlands were considered in this analysis.

The total available national forest area for unplanned deforestation (AVFOR) was derived in Step 2. From this, two spatial domains were identified:

- The LB, corresponding to the project's buffer zone where displaced activities could occur, and
- The Outside Leakage Belt (OLB) area.

Within each domain, peatland extent was determined as follows:

$$PROP_{PEAT-LB,i} = A_{PEAT-LB,i}/A_{LB} \quad , \quad PROP_{PEAT-OLB,i} = A_{PEAT-OLB,i}/A_{OLB}$$

where $A_{PEAT-LB}$ and $A_{PEAT-OLB}$ are the areas of undrained peatland by class of PDT (i) within the LB and outside it, respectively. For each peat stratum, the Peat Depletion Time (PDT_i) was estimated as:

$$PDT_i = \frac{PeatThickness_i(m)}{0.05}$$

Assuming a conservative subsidence rate of 5 cm per year in accordance with reference in Module VMD0016 (X-STR).

Following Equations (16–19) of VMD0010, the emission factor for peat loss at the depletion time was determined as:

$$LK_{PEAT-EFLB,i} = C_{loss-PDT,LB,i}$$

In the absence of site-specific carbon stock data, the emission factor was conservatively approximated using a standardized flux of 51 t CO_2 ha^{-1} yr^{-1}; representing average annual CO_2 emissions from drained tropical peatlands (Default IPCC value); multiplied by the number of years until peat depletion:

$$LK_{PEAT-EFLB,i} = 51 \times tPDT_i$$

This formulation provides a conservative estimate, as it assumes the total peat loss at tPDT occurs instantaneously.

Equivalent emission factors $LK_{PEAT-EFOLB,i}$ were derived for the outside-leakage-belt area using the same rationale and the corresponding distribution of peat thickness strata within AVFOR.

The areas affected by unplanned deforestation displacement were quantified as:

- $A_{LK,unplanned,t}$: annual area displaced within the LB (Step 3), and
- $A_{LK,OLB,t}$: annual area displaced outside the LB (Step 4).

In line with Equation (12) of VMD0010, the total net emissions due to peatland drainage from activity-shifting leakage were calculated as:

$$\Delta C_{LK-ASU-PEAT} = PROP_{PEAT-LB} * LK_{PEAT-EFLB,i} * \sum_{t}^{t*} A_{LK,unplanned,t} + PROP_{PEAT-OLB} * LK_{PEAT-EFOLB,i} * \sum_{t}^{t*} A_{LK,OLB,t}$$

where t^* denotes the year of the baseline period and i the PDT stratum.

The emission factors$LK_{PEAT-EF,LB\times t}$ and$LK_{PEAT-EF,OLB\times t}$ represent the mean of the PDT stratum-specific values weighted by their proportional areas. This formulation yields ex-ante estimates of CO_2 emissions attributable to peatland drainage caused by displaced deforestation, both within and beyond the project's LB.

Table 66 - total ex-ante estimates of leakage emissions in peatland inside and outside the LB in the project scenario

Year	Peatland emissions in LB (tCo2)	Peatland emissions outside LB tCo2)
2025	*76*	*121*
2026	*70*	*112*
2027	*74*	*117*
2028	*66*	*104*
2029	*64*	*101*
2030	*58*	*91*
Total	*407*	*646*

Because Lisala REDD+ project is a continental inland site, with no mangrove or tidal wetland influence, the tidal wetland component does not apply. Consequently,

$$\Delta C_{LK-ASU-TW} = 0$$

3.2.3.6 Emissions from Leakage Prevention Activities

Leakage prevention activities are implemented under the project in order to reduce the risk of displacement of unplanned deforestation drivers. In accordance with VM00010, emissions from these activities must be conservatively included if they result from biomass burning or fertilizer usage.

For Lisala REDD+ project, the planned leakage prevention activities (e.g. community-based forest management, agricultural support, and livelihood alternatives) do not involve biomass burning and do not involve the use of nitrogen fertilizers. As such, both $E_{BiomassBurn,i,t}$ and $N_2O_{direct-N,i,t}$ are zero for all strata and years.

Consequently, total GHG emissions from leakage prevention activities are:

$$GHG_{LK,E} = 0$$

3.2.3.7 Estimation Of Total Leakage Due To The Displacement Of Unplanned Deforestation

Total leakage from activity shifting is obtained by summing leakage into the LB, leakage outside the LB, and any emissions from leakage-prevention activities. For Lisala REDD+ project:

- Leakage into and outside the LB has been quantified in Step 4, with a proportional leakage factor ($LK_{PROP} \approx 0.0096$)
- Leakage in peatland inside and outside LB quantified in Step 5
- No emissions from planned leakage-prevention activities: $GHG_{LK,E} = 0$

Accordingly, the ex-ante total leakage for Lisala REDD+ project simplifies to:

$$\Delta C_{LK-AS,unplanned} = \Delta C_{LK-ASU-LB} + \Delta C_{LK-ASU-OLB} + \Delta C_{LK-ASU-PEAT}$$

Table 67 - total ex-ante estimates of leakage emissions from activity shifting inside and outside LB in the project scenario

Year	Total Ex-ANTE tcO2 Emissions from Activity shifting Leakage
2025	*84 197*
2026	*80 874*
2027	*87 334*
2028	*81 600*
2029	*81 848*
2030	*77 587*
Total	*493 439*

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

State the non-permanence risk rating (%)	12%
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 tCO2e, the Long-term Average (LTA).	Not applicable
Has the LTA been updated based on monitored data, if applicable?	☐ Yes ☐ No *If no, provide justification.*
State, in tCO2e, the expected total GHG benefit to date.	*Not applicable at validation stage (no credits issued yet)*
Is the number of GHG credits issued below the LTA?	☐ Yes ☐ No *If no, provide justification.*

3.2.4.1 Total net emission reductions from the REDD+ project activity

This section presents the ex-ante estimation of total net greenhouse gas (GHG) emission reductions generated by the Lisala REDD+ Project over the first baseline validity period (2025-2030).

In accordance with Equation (1) of VM0007 v1.8, total net emission reductions from the REDD+ project activity are calculated as:

$$NER_{REDD+} = NER_{REDD} + NER_{WRC}$$

The project implements only REDD activities (avoided unplanned deforestation) and does not include any Wetland Restoration and Conservation (WRC) components. Therefore:

$$NER_{WRC} = 0$$

and total net project reductions are therefore:

$$NER_{REDD+} = NER_{REDD}$$

All ex-ante estimations are based on conservative parameter values sourced from the relevant modules (e.g. BL-UP, M-REDD, LK-ASU, VMD0013, VMD0016) and from project-specific carbon stock measurements.

REDD – Summary of Net Emission Reductions

Consistent with Equation (2) of VM0007 v1.8, the total net GHG emission reductions from REDD activities are calculated as:

$$NER_{REDD} = \Delta C_{BSL-REDD} - \Delta C_{WPS-REDD} - \Delta C_{LK-REDD}$$

Where:

- ΔCBSL-REDD = cumulative baseline emissions from unplanned deforestation
- ΔCWPS-REDD = cumulative project emissions (with project scenario avoiding unplanned deforestation)

- ΔCLK-REDD = leakage emissions

Baseline emissions (ΔCBSL-REDD)

The baseline scenario includes only unplanned deforestation, as no planned deforestation occurs in the PA. Therefore:

$$\Delta C_{BSL-REDD} = \Delta C_{BSL,unplanned}$$

Baseline emissions were quantified using Module BL-UP (v3.3), including:

- spatial allocation of baseline deforestation,
- carbon stock loss in aboveground biomass, belowground biomass and dead wood,
- non-CO_2 emissions from biomass burning (VMD0013),

Project emissions (ΔCWPS-REDD)

Under the project scenario, all unplanned deforestation is prevented, and remaining forest carbon stocks are maintained. No other significant emissions expected to occur. Thus:

$$\Delta C_{WPS-REDD} = 0$$

Leakage emissions (ΔCLK-REDD)

Only activity-shifting leakage applies as:

$$\Delta C_{LK-REDD} = \Delta C_{LK-AS,unplanned}$$

Market leakage (LK-ME) does not apply, because the Concession had ceased logging in 2021 and the project does not therefore reduce any ongoing timber production. Planned activity shifting (LK-ASP) does not apply because the project addresses unplanned deforestation only.

Activity-shifting leakage was quantified using Module LK-ASU and the following parameters described in previous sections:

- estimation of immigrant vs. resident deforestation agents (PROPIMM = 0.01),
- availability of forest outside the LB (AVFOR),
- carbon stock stratification using ESA CCI Biomass 2022,
- computation of the proportional leakage factor (LKPROP = 0.0096).

3.2.4.2 Calculation of AFOLU Pooled Buffer Account Contribution

In accordance with VM0007 v1.8 and the VCS AFOLU Requirements, the Lisala REDD+ Project must withhold a portion of its net carbon benefits into the AFOLU Pooled Buffer Account as insurance against non-permanence risks. The buffer withholding is determined as a percentage of the net change in carbon stocks, following the formulas provided in Equations (12)–(15) of VM0007.

Because the project activity includes only avoided unplanned deforestation, and does not include planned deforestation or Wetland Restoration and Conservation (WRC) activities, the total buffer withholding is limited to the component associated with unplanned deforestation:

$$Buffer_{Total} = Buffer_{Unplanned}$$

The project's non-permanence risk was assessed using the VCS AFOLU Non-Permanence Risk Tool, considering internal risks (e.g., management capacity), external risks (governance context, land tenure security), and natural risks (fire, pests, storms, climate variability). The assessment results in an overall non-permanence risk rating of 7%.

This score reflects the sum of three components:

- Internal risk: 0%, due to strong project governance, secured long-term financing, stable concession rights, and demonstrated management capacity.
- External risk: 4%, associated mainly with the national governance context of the DRC but substantially reduced through secure land tenure arrangements, active stakeholder engagement, and formal grievance and community participation mechanisms.
- Natural risk: 3%, as the humid tropical forest ecosystem of Lisala exhibits low fire susceptibility, low incidence of pests and extreme weather events, and no exposure to coastal or geological hazards.

In accordance with the Tool, the overall risk rating is rounded up to the nearest whole percentage, with a minimum threshold of 12%.

$$Buffer_{Unplanned} = 0.12$$

The buffer contribution for unplanned deforestation is calculated following Equation (14) of VM0007. This equation compares the net carbon stock losses under the baseline scenario with the net carbon stock changes under the project scenario and adjusts both terms for any emissions from fossil fuel use or direct N_2O emissions. However, Emissions from fossil fuel combustion are negligible in both the baseline and project scenarios because baseline activities rely almost entirely on manual labour and project operations require only very limited fuel use. Direct N_2O emissions are also negligible, as neither baseline shifting cultivation nor project activities involve the use of synthetic fertilizers. Therefore, the terms $EFC_{i,t}$and $N2O_{direct,i,t}$are assumed to be zero. In addition, the project avoids all unplanned deforestation within the PA, meaning ex-ante that project emissions from unplanned deforestation are equal to zero $\left(\Delta C_{P,Unplanned} = 0\right)$.

Accordingly the buffer withholding is equal to the cumulative baseline emissions from unplanned deforestation multiplied by the applicable buffer percentage:

$$Buffer_{Unplanned} = \Delta C_{BSL,Unplanned} \times 12\%$$

This value represents the ex-ante estimate of the credits to be withheld and deposited in the AFOLU Pooled Buffer Account for the first baseline validity period (2025-2030). This estimate is conditional on the assumption that no unplanned deforestation occurs in the project scenario. In all cases, the buffer contribution will be recalculated and confirmed at each monitoring period based on observed emissions and leakage, in accordance with VCS requirements.

Table 68 - Ex-ante estimates of buffer amount contribution

Vintage period	Estimated baseline emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)
01-March-2025 to 31-December-2025	*832 002*	*99 840*
01-january-2026 to 31-December-2026	*799 236*	*95 908*
01-january-2027 to 31-December-2027	*863 134*	*103 576*
01-january-2028 to 31-December-2028	*806 547*	*96 786*
01-january-2029 to 31-December-2029	*809 051*	*97 086*
01-january-2030 to 31-December-2030	*767 005*	*92 041*
Total	*4 876 975*	*585 237*

3.2.4.3 Uncertainty Analysis

The quantification of uncertainty in the baseline estimates followed the procedures outlined in the *VMD0017 module (Version 2.2), applying the three-step framework for assessing and propagating uncertainties in the baseline scenario of REDD+ projects. The analysis integrates uncertainty in (i) the projected rate of baseline deforestation and (ii) the baseline carbon stocks and emissions, leading to iii) the overall baseline uncertainty in the REDD+ scenario.*

Uncertainty in Projection of Baseline Rate of Deforestation

The baseline rate of unplanned deforestation for the Lisala REDD+ project was estimated through historical regression analysis, in accordance with the provisions of Section 5.1.1(B) of VMD0017 v2.2. The approach is consistent with Module BL-UP, which prescribes the use of regression models to project unplanned deforestation when driven by observed temporal trends.

Annual deforestation data covering 2014–2024 were compiled from Tropical Moist Forest dataset of Joint Research Centre. The total area deforested each year (in ha) was used as the dependent variable, and year (t) as the independent variable. A simple linear regression was fitted to this time series, describing the evolution of deforestation over time according to the equation:

$$Def_t = 5758.2 - 392.6 \times t$$

The model indicates a statistically significant decrease in annual deforestation across the observation period ($p < 0.01$). In addition, regression diagnostics confirmed the absence of heteroscedasticity or serial correlation in residuals, validating the linear form for uncertainty estimation.

Following Equation (1) of VMD0017 v2.2, the uncertainty in the baseline rate of unplanned deforestation for each year (t) was calculated as the half-width of the 95% confidence interval of the predicted mean deforestation divided by the predicted value:

$$U_{BSL,RATE,t} = (Half - width\ of\ 95\%\ CI\ for\ \widehat{Def}_t) \ / \ \widehat{Def}_t$$

Individual-year uncertainties were obtained directly from the regression confidence intervals. These annual uncertainties were then propagated cumulatively across all years of the historical period (2014–2024) using Equation (3) of the module:

$$U_{BSL,RATE,t*} = \sqrt{\sum_{t=1}^{t*} (U_{BSL,RATE,t} \times \widehat{Def}_t)^2 \ / \sum_{t=1}^{t*} (\widehat{Def}_t)^2}$$

Accordingly, the cumulative uncertainty of the baseline deforestation rate over the 2014–2024 period was estimated as:

$$U_{BSL,RATE,t*} = 8.1\%$$

This value represents the combined effect of temporal variability and regression error, aggregated over the full historical reference period.

Table 69 - Summary of regression and uncertainty in baseline rate

Parameter	Value
Regression model	Linear (deforested area vs year)
Period of analysis	2014–2024 (11 years)
Intercept (β_0)	5758.2
Slope (β_1)	-392.6
Residual Std. Error	948.1
R^2 (adjusted)	0.64

Cumulative uncertainty	**8.1%**

Uncertainty of Emissions and Removals in PA in Baseline Scenario

The uncertainty of baseline emissions and removals was assessed following Equations (4) and (5) of VMD0017 v2.2. This step aggregates uncertainty across all relevant carbon pools within each stratum, and subsequently across strata. The following carbon pools were included, consistent with VMD0001 (Above- and Belowground Biomass) and VMD0002 (Dead Wood):

- Above-Ground Biomass (AGB)
- Below-Ground Biomass (BGB)
- Dead Standing Wood (DSW)
- Dead Lying Wood (DLW)

Since the PA does not include peatlands or wetland restoration components, no WRC activity applies, soil organic carbon (SOC) was excluded from uncertainty estimation.

For each pool, uncertainty was expressed as the half-width of the 95% confidence interval as a percentage of the mean, computed from field measurements. Pool-specific results are summarized below.

Table 70 - Carbon pool uncertainties (baseline scenario)

Pool	Strata	Mean (t d.m. ha^{-1})	95% CI	Uncertainty (%)
AGB	*Dense Forest*	*285.4*	*[257.4 – 313.3]*	*9.8%*
	Swamp Forest	*219.4*	*[133.3 – 305.6]*	*39.2%*
BGB	*Dense Forest*	*68.5*	*[61.8-75.2]*	*9.8%*
	Swamp Forest	*52.7*	*[32.1 – 73.2]*	*39.2%*
DSW	*Dense Forest*	*8*	*[4– 12]*	*0,5*
	Swamp Forest	*7.6*	*[0.9 -14.4]*	*88.7%*
DLW	*Dense Forest*	*38.4*	*[22.5 – 54.3]*	*41.4%*
	Swamp Forest	*37.8*	*[7 – 68.5]*	*81.4%*

The mean carbon stock values and associated uncertainties presented above were used to estimate baseline emissions by pool and stratum. For each pool, the mean carbon density (t DM ha^{-1}) was converted to carbon dioxide equivalent emissions (t CO_2e ha^{-1}) using the applicable conversion factors, and then combined with activity data (i.e., baseline deforestation area per year and per stratum). These

estimates represent the expected baseline greenhouse gas emissions resulting from unplanned deforestation during the first crediting period. For the purpose of assessing carbon stock variability and pool-level uncertainty, emissions from below-ground biomass (BGB) and dead wood (DW) were conservatively assumed to be released instantaneously following deforestation. This assumption is applied only for uncertainty characterization and does not affect the baseline emissions used for crediting calculations. The resulting values by pool and stratum are summarized below.

Table 71 - Baseline emissions by pool from unplanned deforestation used to estimate uncertainty (first crediting period)

	E bsli	tco2/ha	2025	2026	2027	2028	2029	2030	$E_{REDD-BSL,SS}$
	A_unpplaned	*-*	*1 637*	*1 513*	*1 585*	*1 416*	*1 370*	*1 238*	*-*
	E_AGB	*492*	*805 141*	*744 153*	*779 565*	*696 444*	*673 820*	*608 897*	*4 308 021*
	E_BGB	*118*	*193 234*	*178 597*	*187 096*	*167 147*	*161 717*	*146 135*	*1 033 925*
	E_DSW	*14*	*22 569*	*20 859*	*21 852*	*19 522*	*18 888*	*17 068*	*120 757*
	E_DLW	*66*	*108 330*	*100 124*	*104 889*	*93 705*	*90 661*	*81 926*	*579 636*
Dense forest	*Total*	*690*	*1 129 274*	*1 043 733*	*1 093 402*	*976 818*	*945 086*	*854 026*	*6 042 339*
	A_unpplaned	*-*	*-*	*1*	*-*	*1*	*1*	*1*	*-*
	E_AGB	*378*	*-*	*378*	*-*	*378*	*378*	*378*	*1 512*
	E_BGB	*91*	*-*	*91*	*-*	*91*	*91*	*91*	*363*
	E_DSW	*13*	*-*	*13*	*-*	*13*	*13*	*13*	*52*
	E_DLW	*65*	*-*	*65*	*-*	*65*	*65*	*65*	*261*
Swamp forest	*Total*	*547*	*-*	*547*	*-*	*547*	*547*	*547*	*2 188*

The combined uncertainty across these pools was calculated using the root-sum-of-squares weighted by their respective baseline emissions (t CO_2e) is:

$$U_{REDD-BSL,SS} = \frac{\sqrt{\sum_{i=1}^{M}(U_{REDD-BSL,SS,i} * E_{REDD-BSL,SS,i})^2}}{\sum_{i=1}^{M} E_{REDD-BSL,SS,i}}$$

This yields a combined baseline emission uncertainty of 8.3% (95% CI).

Treatment of uncertainty for biomass burning emissions

Emissions from biomass burning are estimated in the baseline scenario using Module VMD0013 (E–BPB), based on the annual area of unplanned deforestation in the tropical dense forest stratum and a set of combustion and emission factors. The activity data (Aburn,i,t) used in non CO2 emissions from biomass burning are directly derived from the baseline deforestation area, for which uncertainty is already explicitly accounted for in the baseline rate uncertainty term in Step 1.

In addition, the average aboveground biomass stock before burning (Bi,t) is based on the same carbon pools (AGB, DSW, DLW) for which uncertainty has been quantified in Table 2 and propagated in the combined baseline stock uncertainty.

Combustion factors (COMFi) and non-CO_2 emission factors (Gg,i) are not derived from project-specific measurements but taken from IPCC default values. Global warming potentials (GWPg) follow IPCC AR6 values required under the VCS Standard and are treated as fixed normative parameters.

Given that, uncertainty in activity data (deforestation area) is already included in the baseline rate uncertainty term, uncertainty in biomass stocks is already captured in the carbon pool uncertainties reported above, and all combustion and emission coefficients are chosen conservatively from IPCC default value, no additional uncertainty term is propagated for Emissions from biomass burning.

Estimate Total Uncertainty in REDD+ Baseline Scenario

The final cumulative uncertainty in the REDD+ baseline scenario combines both components: (1) uncertainty in the baseline deforestation rate and (2) uncertainty in baseline carbon stocks and emissions.

Following Equation (6) of VMD0017 v2.2:

$$U_{REDD,BSL,t*} = \sqrt{[U_{BSL,RATE,t*}{}^{2} + \boldsymbol{U_{REDD-BSL,SS}}{}^{2}]}$$

Substituting the calculated values:

$$U_{REDD,\,BSL,\,t*} = \text{sqrt}(8.1^2+8.3^2)=11.6\%$$

Therefore, the total uncertainty in the REDD+ baseline scenario is estimated at ±11.6% (95% CI). This value represents the integrated uncertainty in baseline emissions and removals, including both the variability in deforestation rate projections and the precision of carbon stock measurements across all relevant pools.

Table 72 - Summary of baseline uncertainty estimates

Description	Uncertainty (95% CI)
Baseline rate of deforestation	*8.1%*
Carbon stocks (AGB, BGB, DSW, DLW)	*8.3%*

Combined baseline uncertainty	*11.6%*

Uncertainty in the REDD Project Scenario (Ex-ante)

At this stage, the project is being assessed ex-ante, prior to the implementation of monitoring activities and before any direct remeasurement of project-area carbon stocks. Consequently, no ex-post estimates of emissions or removals are yet available. According to VMD0017 (v2.2, Section 5.3), where no ex-post remeasurements of carbon pools or GHG sources have been made, the uncertainty term for the REDD project scenario is set to zero:

$$U_{REDD-WPS} = 0$$

This avoids double-counting uncertainty, as all measurement and modeling errors are already reflected in the baseline uncertainty term ($U_{BSL,RATE,t*}$) and in the ex-ante modeling assumptions used to project expected emission reductions.

Thus, the uncertainty in the project scenario (WPS) is set to zero until field verification data become available during the first monitoring period. Therefore, the total project uncertainty is driven solely by the baseline component at this stage.

Total Error in the REDD+ Project Activity (Ex-Ante)

At this ex-ante stage, the total uncertainty associated with the REDD+ project activity was calculated following Equation (21) of VMD0017 v2.2. However, as no ex-post measurements of carbon pools or GHG emissions have yet been conducted, and the project does not include any WRC (Wetland Restoration and Conservation) component, the uncertainty terms related to the project scenario are set to zero. Accordingly, the total project uncertainty simplifies to the baseline component only:

$$NER_{REDD+_ERROR} = \frac{\sqrt{(U_{BSL,RATE,t*} \times \Delta C_{BSL-REDD,t*})^2}}{\Delta C_{BSL-REDD,t*}}$$

$$\text{NER}_{\text{REDD+_ERROR}} NER_{REDD+_ERROR} = 11.2\%$$

Under ex-ante conditions, the total uncertainty of the REDD+ project is equal to the baseline uncertainty, because all project-related parameters are modeled projections with no direct measurements.

Consequently, the resulting value of 11.6% (95% CI) represents the best estimate of overall uncertainty in the REDD+ project activity at validation. This value will be updated ex post, once monitoring data becomes available, to include the empirical uncertainty of project activities.

Table 73 - Summary of total uncertainty

Component	Component	Uncertainty (95% CI)
$U_{REDD-BSL,t^*}$	*Baseline scenario*	*11.6%*
$U_{REDD-WPS}$	*Project scenario*	*0*
$U_{REDD+ERROR}$	*Total uncertainty*	*11.6%*

The total uncertainty will be reassessed during the first verification (ex post), once actual biomass remeasurements and activity data are available. At that time, the full form of Equation (21) will be applied, combining baseline and project components to determine the final uncertainty-adjusted emission reductions.

Uncertainty Adjustment Factor

At this ex-ante stage, the uncertainty assessment aims to ensure that the baseline projections, activity data, and modeled emission reductions are developed and reported in a conservative and transparent manner, following the procedures outlined in VMD0017 v2.2, Part 6.

Under the REDD+ framework, the allowable uncertainty for emission reductions is ±15 % of NER_{REDD} at the 95 % confidence level. When the calculated uncertainty exceeds this threshold, a proportional deduction must be applied to the verified emission reductions during ex post verification, according to Equation (22) of VMD0017:

$$Adjusted_NER_{REDD+} = (NER_{REDD}) \times (100\% - (NER_{REDD+_ERROR} - 15\%))$$

Because this assessment is conducted prior to project validation, no verified emission reductions have yet been generated. The total project uncertainty is therefore equal to the baseline uncertainty, i.e. ±11.6 % (95 % CI). Although the ±15 % precision threshold applies formally at verification, an indicative deduction can be presented at this ex-ante stage to transparently show the potential impact of uncertainty on the net GHG benefit.

The excess uncertainty beyond the allowable threshold is then 0%. Because uncertainty is ≤15%, no deduction is applied to the modeled ex-ante emission reductions. This adjustment does not affect crediting at this stage but provides a forecast of potential future deductions during verification, ensuring methodological consistency and transparency. Final uncertainty and deductions will be formally reassessed at the first verification (ex post) once empirical data are available.

Table 74 - Summary of uncertainty and indicative adjustment

Component	Description	VALUE
$U_{REDD-BSL,t^*}$	*Baseline uncertainty (regression + field data)*	*11.6 %*
$U_{REDD-WPS}$	*Project scenario uncertainty*	*0 % (ex-ante)*
$U_{REDD+ERROR}$	*Total uncertainty (Eq. 21 simplified)*	*11.6%*
Allowable threshold	*Standard limit*	*15 %*
Excess uncertainty	*Difference above threshold*	*0 %*
Adjustment factor	*(100 % – Excess uncertainty %)*	*100 %*

3.2.4.4 Calculation of Verified Carbon Units

The number of Verified Carbon Units (VCUs) issued for a given monitoring period is calculated in accordance with VM0007. For a monitoring period defined as $t = t_2 - t_1$, VCUs are determined using the following equation:

$$VCU_t = \left(Adjusted_NER_{\ REDD+,t2} - Adjusted_NER_{\ REDD+,t1}\right) - Buffer_t$$

Where:

VCU_t is the number of Verified Carbon Units issued for the monitoring period (VCU);

$Adjusted_NER_{\ REDD+,t}$ and $Adjusted_NER_{\ REDD+,t1}$ are the cumulative total net GHG emission reductions of the REDD+ project activity up to years t_2 and t_1, respectively, adjusted for uncertainty (tCO_2e); $Buffer_t$ is the total permanence risk buffer withholding applicable to the monitoring period (tCO_2e).

As demonstrated in the uncertainty assessment section, the ex-ante cumulative uncertainty associated with the REDD+ project activities is below the allowable threshold of ±15% at the required confidence level. Consequently, no uncertainty deduction is applied, and:

$$Adjusted_NER_{\ REDD+,t} = NER_{\ REDD+,t}$$

Finally, the following table presents an ex-ante summary of annual estimated emissions and expected VCUs for the first baseline validity period, including baseline emissions, project emissions, leakage emissions, buffer withholding, and estimated total VCU issuance.

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated NER (tCO2e)	Estimated total VCU issuance (tCO2e)
01-March-2025 to 31-December-2025	*832 002*	*-*	*84 197*	*99 840*	*747 805*	*647 965*
01-january-2026 to 31-December-2026	*799 236*	*-*	*80 874*	*95 908*	*718 363*	*622 454*
01-january-2027 to 31-December-2027	*863 134*	*-*	*87 334*	*103 576*	*775 800*	*672 224*
01-january-2028 to 31-December-2028	*806 547*	*-*	*81 600*	*96 786*	*724 947*	*628 161*

01-january-2029 to 31-December-2029	809 051	-	81 848	97 086	727 203	630 117
01-january-2030 to 31-December-2030	767 005	-	77 587	92 041	689 419	597 378
Total	**4 876 975**	**-**	**493 439**	**585 237**	**4 383 536**	**3 798 299**

3.3 Monitoring

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

Data / parameter	$A_{BSL,LB,unplanned,t}$
Data unit	*ha*
Description	*Area of unplanned baseline deforestation in the LB occurring in forest stratum i (e.g. dense forest, swamp forest) in year t, obtained by intersecting the spatially allocated baseline deforestation maps with the forest-stratum map.*
Source of data	*Baseline deforestation maps (spatial allocation outputs).* *Forest stratification from X-STR (pre-deforestation strata).* *LB boundary*
Value applied	*Annual areas of baseline deforestation in the LB for 2025–2030 (ha) as reported in Baseline Emissions section.*
Justification of choice of data or description of measurement methods and procedures applied	*Spatial modelling results satisfies BL-UP requirements* *The deforestation risk model was calibrated and its performance evaluated using Figure of Merit (FOM) following BL-UP guidance.* *BL-UP requires that projected baseline deforestation be stratified and that hectares deforested each year be summed by stratum which is then used in Step 4.3 for baseline carbon stock changes.* *Using the same stratification as in carbon stock estimation (CP-AB) ensures that deforestation areas are matched with the relevant emission factors.*
Purpose of data	*Forms the annual baseline deforestation area by stratum in the LB, by year, which is combined with emission factors to calculate baseline CO_2 emissions from deforestation.*
Comments	*N/A*

Data / parameter	$A_{BSL,PA,unplanned,t}$
Data unit	*ha*

Description	*Area of unplanned baseline deforestation in the PA occurring in forest stratum i (e.g. dense forest, swamp forest) in year t, obtained by intersecting the spatially allocated baseline deforestation maps with the forest-stratum map.*
Source of data	*Baseline deforestation maps (spatial allocation outputs).* *Forest stratification from X-STR (pre-deforestation strata).* *PA boundary*
Value applied	*Annual areas of baseline deforestation in the PA for 2025–2030 (ha) as reported in Baseline Emissions section.*
Justification of choice of data or description of measurement methods and procedures applied	*Spatial modelling results satisfies BL-UP requirements* *The deforestation risk model was calibrated and its performance evaluated using Figure of Merit (FOM) following BL-UP guidance.* *BL-UP requires that projected baseline deforestation be stratified and that hectares deforested each year be summed by stratum to give Aunplanned,i,t, which is then used in Step 4.3 for baseline carbon stock changes.* *Using the same stratification as in carbon stock estimation (CP-AB) ensures that deforestation areas are matched with the relevant emission factors.*
Purpose of data	*Forms the annual baseline deforestation area by stratum in the PA, by year, which is combined with emission factors to calculate baseline CO_2 emissions from deforestation.*
Comments	*N/A*

Data / parameter	$A_{BSLRRD,unplanned,t}$
Data unit	*ha*
Description	*Modeled annual area of unplanned baseline deforestation in the RRD in year t, obtained from a statistically significant linear regression of historical deforestation against time, in accordance with BL-UP Step 2.2.*
Equations	*Linear regression (selected option in BL-UP):* $A_{BSL,RRD,unplanned,t} = m \times th + int$ *with:* $m = -392.6 ha \cdot yr^{-1}$ *(slope)* *int = 5 758.2 ha (intercept)* *th = 1…11 (years since start of HRP) for model calibration; applied to baseline years t = 1…6 (2025–2030).*
Source of data	*Regression fitted to the annual observed deforestation series in the RRD over 2014–2024 derived from the Forest Cover Benchmark Maps, following BL-UP Step 2.2.*
Value applied	*Annual areas of baseline deforestation in the RRD for 2025–2030 (ha) as reported in Baseline Emissions section.*
Justification of choice of data or description of measurement methods and procedures applied	*The regression is statistically significant ($p < 0.05$) and shows a decreasing trend (negative slope), which BL-UP requires to be adopted when significant.*

Purpose of data	*Serves as the annual area of unplanned baseline deforestation at the RRD level, feeding subsequent steps:* *Scaling to RRL ($ABSL_{,RR,unplanned},t$) via PRRL (BL-UP Eq. 4).* *Spatial allocation of baseline deforestation over the RRL, PA, LB and across strata (BL-UP Part 3).*
Comments	*N/A*

Data / parameter	$A_{BSL,RR,unplanned,t}$
Data unit	*ha*
Description	*Projected annual area of unplanned baseline deforestation in RRL in year t, obtained by scaling $ABSL_{,RRD,unplanned,t}$ by the ratio of forest area in RRL vs RRD at baseline start.*
Source of data	*$ABSL_{,RRD,unplanned,t}$ from the regression described above.* *P_{RRL} computed from forest areas in RRL and RRD at baseline start (2024) using Forest Cover Benchmark Map.*
Value applied	*Time series of annual deforestation areas in the RRL for 2025–2030 (ha), as reported in Baseline Emissions section.*
Justification of choice of data or description of measurement methods and procedures applied	*Required BL-UP step when applying spatial modelling: deforestation is first projected at the RRD level, then scaled to the RRL before being spatially allocated.* *Scaling with PRRL ensures that modeled deforestation at the RRL reflects differences in forest availability between RRL and RRD.*
Purpose of data	*Provides the annual total area of baseline deforestation to be spatially allocated by the risk model across the RRL, including the PA and LB.*
Comments	

Data/Parameter	A_{LB}
Data unit	*ha*
Description	*Total area of forest in the LB*
Source of data	• *LB boundary* • *Forest Cover Benchmark Map*
Value applied	*141 026 ha*
Description of measurement methods and procedures to be applied	*Overlay LB boundary with the LB Forest Cover Benchmark Map*

Purpose of data	*Calculating baseline unplanned deforestation in the LB and ex-ante estimates of leakage emissions*
Calculation method	*GIS area computation from GIS data overlay.*
Comments	

Data / parameter	$A_{PEAT\text{-}LB}$
Data unit	*ha*
Description	*Total area of undrained peatland located within the LB at the project start date (t_0).*
Source of data	*GIS analysis combining: LB boundary for Lisala REDD+; National / regional undrained peatland layer from the median peat depth map of Crezee et al. (2022) for the Congo Basin*
Value applied	*824*
Justification of choice of data or description of measurement methods and procedures applied	*The corrected Crezee et al. (2022) peat thickness map is the most comprehensive and recent peat dataset for the Congo Basin. All peat thickness values were conservatively reduced by 0.5 m in line with X-STR guidance to account for mapping errors, possible subsidence and coarse woody debris, and pixels with corrected peat thickness < 0.5 m were reclassified as mineral soils. APEAT-LB is derived by intersecting this corrected peatland layer with the LB*
Purpose of data	*To quantify the share of peatland within the LB and thus determine the fraction of displaced unplanned deforestation that affects peat soils (PROPPEAT-LB) and the associated peatland leakage emissions under Module LK-ASU*
Comments	

Data / parameter	$A_{RRL,forest,t}$
Data unit	*ha*
Description	*Total forest area in the RRL in year* t*, derived from Forest Cover Benchmark Map*
Source of data	*RRL Forest Cover Monitoring Map (annual binary forest / non-forest map, 30 m resolution).*
Value applied	*438 715 ha*
Justification of choice of data or description of measurement methods and procedures applied	*Count pixels classified as "forest" in year* t *and convert to hectares.*
Purpose of data	*Implicitly used for scaling baseline deforestation areas in spatial modeling.*
Comments	-

Data / parameter	*CAB,post*
Data unit	*t CO_2e ha^{-1}*
Description	*Long-term average above-ground tree carbon stock in the post-deforestation land-use class adopted in the baseline (CRCA – "Culture et Régénération de Culture Abandonnée"). This represents the time-weighted average carbon stock over the full cultivation–fallow cycle, as required for cyclical land uses in BL-UP / M-REDD.*
Equations	*CAB,post = AGB(CRCA) × CF × (44/12)* *Where:* *AGB(CRCA): long-term average aboveground dry biomass for CRCA (tDM ha^{-1})* *CF: biomass-to-carbon fraction*
Source of data	*AGB(CRCA) = 24.01 tDM ha^{-1} from DRC FREL (2018) for the "CRCA" class (nationally approved reference level).*
Value applied	*41.47 tCO_2e ha^{-1}*
Justification of choice of data or description of measurement methods and procedures applied	*Use option 1 of BL-UP and M-REDD representing future post-deforestation land use by the land use with the highest long-term carbon stock that is also representative of observed post-deforestation trajectories.* *Analysis of land-use transitions in the RRD over 2014–2024 shows that most deforested areas transition to small-scale agriculture with fallow, consistent with the CRCA class in the DRC FREL.* *Using FREL values, already reviewed internationally, ensures consistency with national accounting and provides conservative, yet realistic, post-deforestation carbon stocks.*
Purpose of data	*Used in BL-UP / M-REDD to compute baseline carbon stock changes from deforestation in above-ground tree biomass*
Comments	*N/A*

Data / parameter	*CBB,post*
Data unit	*t CO_2e ha^{-1}*
Description	*Long-term average below-ground tree (root) carbon stock in the post-deforestation land-use class (CRCA), consistent with the Option 1 approach in BL-UP and DRC FREL.*
Equations	*BGB(CRCA) × CF × (44/12)*
Source of data	*From DRC FREL (2018) for CRCA.*
Value applied	*15.39 tCO_2e ha^{-1}*
Justification of choice of data or description of measurement methods and procedures applied	*Same rationale as for CAB,post: use of nationally approved CRCA carbon stock as conservative post-deforestation reference.* *BL-UP requires that pre- and post-deforestation stocks in included pools be determined consistently using CP-AB.*

Purpose of data	*Used to calculate baseline carbon stock change in below-ground tree biomass*
Comments	*N/A*

Data / parameter	$CAB_{_tree,bsl,i}$
Data unit	*t CO_2e ha^{-1}*
Description	*Mean above-ground tree carbon stock in the baseline scenario for forest stratum i (tropical dense forest; tropical swamp forest). Estimated from the project's forest inventory using CP-AB procedures and converted to CO_2e.*
Equations	*Estimate from CP-AB Eq. (1) and (2)*
Source of data	*Project forest inventory (fixed-area plots, 200 m × 25 m) and Chave et al. (2005) moist-forest allometric equation, implemented in accordance with CP-AB.*
Value applied	*Dense forest stratum: 491.8 t CO_2e ha^{-1}* *Swamp forest stratum: 376.4 t CO_2e ha^{-1}*
Justification of choice of data or description of measurement methods and procedures applied	*Inventory design, DBH thresholds and plot sizes follow CP-AB sampling guidance for tropical forests.* *Uncertainties and 95% confidence intervals were quantified and is handled in emission uncertainty deductions using X-UNC.*
Purpose of data	*To quantify baseline above-ground tree carbon stocks used in:* *baseline emission factor calculations (CP-AB), and* *uncertainty assessment and deductions (X-UNC).*
Comments	

Data / parameter	$CBB_{_tree,bsl,i}$
Data unit	*t CO_2e ha^{-1}*
Description	*Mean below-ground tree biomass carbon stock (root biomass) in the baseline scenario for stratum*i (dense forest; swamp forest), estimated using a root-to-shoot ratio applied to above-ground biomass, consistent with CP-AB Part 2.*
Equations	*Estimate from CP-AB Eq. (5) and (6)*
Source of data	*Above-ground biomass from the same inventory as CAB_tree,bsl,i.* *Root-to-shoot ratio R = 0.24 for tropical moist forests (IPCC default) as permitted under CP-AB Part 2.*
Value applied	*Dense forest stratum: 118.0 t CO_2e ha^{-1}* *Swamp forest stratum: 90.8 t CO_2e ha^{-1}*
Justification of choice of data or description of measurement methods and procedures applied	*CP-AB explicitly allows derivation of below-ground biomass using a root-to-shoot ratio where direct root measurements are impractical.* *The ratio R = 0.24 and associated BGB stocks are consistent with tropical moist forest IPCC guidance and were propagated from AGB.*

Purpose of data	*To calculate baseline emissions from loss of below-ground tree biomass due to deforestation.*
Comments	

Data / parameter	$CDW_{,bsl,i}$
Data unit	*t CO_2e ha^{-1}*
Description	*Mean baseline carbon stock in the dead-wood pool (standing and lying dead wood) for stratum i (dense forest; swamp forest), prior to deforestation, estimated following CP-DW (VMD0002).*
Equations	*Lying dead wood biomass is estimated following Eq. (8) of the CP-DW Module.* *Standing dead wood biomass is calculated from tree-level volume and DDWdc using Eqs. (1)–(6) of the CP-DW Module.* *Stratum-level dead-wood carbon stock is derived following Eq. (9) of the CP-DW Module.*
Source of data	*Standing and lying dead wood measured on the same plots as live biomass using fixed-area plots (DSDW) and line-intersect transects (DLW), in accordance with CP-DW.* *Dead-wood carbon fraction CF_DW = 0.47 (IPCC default, as in CP-DW).*
Value applied	*For Dense Forest stratum:* *Dead standing wood: 13.8 t CO_2e ha^{-1}* *Dead lying wood: 66.2 t CO_2e ha^{-1}* *CDW,bsl,dense = 80.0 t CO_2e ha^{-1}* *For Swamp forest stratum:* *Dead standing wood: 13.1 t CO_2e ha^{-1}* *Dead lying wood: 65.1 t CO_2e ha^{-1}* *CDW,bsl,swamp = 78.2 t CO_2e ha^{-1}*
Justification of choice of data or description of measurement methods and procedures applied	*Sampling design (line-intersect and fixed-area plots) strictly follows CP-DW requirements, including diameter thresholds and decay-class recording.* *Dead-wood carbon stocks and associated 95% confidence intervals were estimated separately for dense and swamp strata, with relative uncertainties documented and used in X-UNC.*
Purpose of data	*To quantify baseline emissions from loss of dead-wood carbon under deforestation and disturbance, and to support uncertainty deductions at the project level (X-UNC).*
Comments	

Data / parameter	*CF*
Data unit	*t C per t dry matter (dimensionless)*
Description	*Carbon fraction applied to live and dead biomass to convert dry matter (t d.m. ha^{-1}) to carbon (t C ha^{-1}) for all biomass pools (above- and below-ground live trees, non-tree vegetation and dead wood), consistent with CP-AB and CP-DW.*

Equations	*Used in:* *CP-AB: Eqs. (1) to (4) to convert above- and below-ground biomass to carbon stocks.* *CP-DW: Eq. (9) to convert dead standing and lying wood biomass to carbon stocks.*
Source of data	*IPCC 2006 Guidelines default carbon fraction for woody biomass (0.47), as permitted by CP-AB Section 5.1 and CP-DW data and parameters section.*
Value applied	*0.47 t C per t d.m.*
Justification of choice of data or description of measurement methods and procedures applied	*Species-specific carbon fractions are not available for the full range of tropical species in the PA. CP-AB and CP-DW allow use of the IPCC default 0.47 for woody biomass, which is widely applied, conservative and consistent with the dead-wood module.*
Purpose of data	*To convert plot-level and stratum-level biomass estimates into carbon stocks for all woody pools in both the baseline and project scenarios.*
Comments	

Data / parameter	C_{Olb}
Data unit	*t* CO_2*e ha* $^{-1}$
Description	*Area-weighted average above-ground tree carbon stock for forests available for unplanned deforestation outside the LB.* *Used in LK-ASU to compute the proportional carbon-stock difference between forests inside and outside the LB (PROPCS).*
Source of data	*Peer-reviewed ESA CCI Biomass 2022 dataset (global, spatially explicit aboveground biomass map) converted to* CO_2*e.*
Value applied	*503*
Justification of choice of data or description of measurement methods and procedures applied	*ESA CCI Biomass 2022 provides globally consistent, peer-reviewed, and spatially explicit aboveground biomass estimates suitable for national-to-regional forest stratification.*
Purpose of data	*Used to determine PROPCS, a scaling factor in LK-ASU leakage calculations, capturing the relative carbon-stock difference between forests inside and outside the LB.*
Comments	-

Data / parameter	C_{lb}
Data unit	*t* CO_2*e ha* $^{-1}$
Description	*Area-weighted average above-ground tree carbon stock of forests inside the LB.* *Used in LK-ASU to compute the proportional carbon-stock difference between forests inside and outside the LB (PROPCS).*
Source of data	*Peer-reviewed ESA CCI Biomass 2022 dataset (global, spatially explicit aboveground biomass map) converted to* CO_2*e.*

Value applied	*522*
Justification of choice of data or description of measurement methods and procedures applied	*ESA CCI Biomass 2022 provides globally consistent, peer-reviewed, and spatially explicit aboveground biomass estimates suitable for national-to-regional forest stratification.*
Purpose of data	*Used to determine PROPCS, a scaling in LK-ASU leakage calculations, capturing the relative carbon-stock difference between forests inside and outside the LB.*
Comments	-

Data / parameter	$C_{BSL,LK,unplanned}$
Data unit	*t* CO_2e ha^{-1}
Description	*Net CO2 emissions in the baseline from unplanned deforestation in the LB.*
Source of data	*All available activity data and carbon-stock parameters and coefficients derived from Module LK-ASU*
Value applied	*As reported in the leakage emissions section*
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of data	*Ex-ante estimation of baseline emissions in the LB*
Comments	-

Data / parameter	*COMFi*
Data unit	*Dimensionless*
Description	*Combustion factor for tropical moist forest*
Source of data	*IPCC 2006 Guidelines*
Value applied	*0.5*
Justification of choice of data or description of measurement methods and procedures applied	*Default IPCC value for slash-and-burn agriculture in humid tropical forests (Table 2.6, IPCC 2006, Volume 4, Chapter 2). This value is consistent with field conditions in the tropical dense forest stratum of the Lisala Project and is used widely in REDD+ projects for similar land-use systems. Default values are updated when new IPCC guidelines are released.*
Purpose of data	*Calculation of baseline, project, and leakage non-*CO_2 *emissions from biomass burning*
Comments	

Data / parameter	*$Depthpeat_{-BSL,i}$,*
Data unit	*m*
Description	*Average peat thickness in baseline scenario stratum i at the project start date (t_0), after conservative correction of mapped peat depths in accordance with X-STR.*
Source of data	*Median peat depth raster of Crezee et al. (2022) for the Congo Basin; Conservative correction applied following X-STR (all depths reduced by 0.5 m); Stratification of peatland within the PA and LB.*
Value applied	*Stratum-specific mean peat thickness values (m) for each peat stratum i, derived from the corrected Crezee depth raster and stored in the project's GIS database. No single project-wide value is applied.*
Justification of choice of data or description of measurement methods and procedures applied	*Direct peat depth measurements were not collected for Lisala; the project instead follows X-STR procedures that allow use of existing peat depth maps, provided they are corrected conservatively. The 0.5 m reduction and reclassification of shallow peat (< 50 cm) to mineral soil strictly follow X-STR recommendations and ensure conservative PDT values and crediting duration.*
Purpose of data	*Intermediate parameter for:* *Stratification of peatland into PDT classes under X-STR;* *Determination of peatland areas eligible for SOC crediting and for peat leakage accounting under LK-ASU.*
Comments	

Data / parameter	*DDW_{dc}*
Data unit	*t d.m. m^{-3}*
Description	*Mean wood density of dead wood in decay (density) class dc – sound (1), intermediate (2) and rotten (3). Used to convert dead-wood volume to biomass for both standing and lying dead wood under CP-DW.*
Equations	*Appears in:* *Standing dead wood biomass: CP-DW Eqs. (1)–(2).* *Lying dead wood biomass: CP-DW Eq. (8).*
Source of data	*Global Wood Density Database, adjusted with decay-class reduction factors following Harmon & Sexton (1996) and Verra VMD0002 guidance*
Value applied	*Based on species wood-density data in the project and decay-class adjustments the average DDWdc are:* *Dense Terra Firme Forest:* • *DDW_1 (sound) = 0.65 t d.m. m^{-3}* • *DDW_2 (intermediate) = 0.49 t d.m. m^{-3}* • *DDW_3 (rotten) = 0.26 t d.m. m^{-3}* *Swamp Forest:* • *DDW_1 (sound) = 0.58 t d.m. m^{-3}* • *DDW_2 (intermediate) = 0.46 t d.m. m^{-3}*

	• DDW_3 (rotten) = 0.25 t d.m. m^{-3}
Justification of choice of data or description of measurement methods and procedures applied	Field inventory recorded decay class for each standing and lying dead-wood element. Species-specific live-wood densities (ρ) were taken from the Global Wood Density Database when available. Decay-class adjustment factors: 1.00, 0.80, 0.45 for sound, intermediate, and rotten wood, respectively, applied following Harmon & Sexton (1996) and CP-D guidance.
Purpose of data	To convert field-measured dead-wood volumes (standing and lying) to dry biomass for deriving CDW,bsl,i and project dead-wood carbon stocks used in baseline emissions, project emissions, and uncertainty assessment under X-UNC
Comments	

Data / parameter	fj(X,Y…)
Data unit	Dimensionless allometric function
Description	Allometric model linking tree-level field measurements (diameter at breast height, DBH, and basic wood density ρ) to above-ground biomass (AGB) of live trees in tropical moist forests. Used within CP-AB to estimate tree biomass from inventory measurements in the PA and LB.
Equations	Chave et al. (2005) pantropical moist-forest model: $AGB = \exp(-1.499 + 2.148 \ln(DBH) + 0.207[\ln(DBH)]^2 - 0.0281[\ln(DBH)]^3) \times \rho$ Where DBH is in cm and ρ in g cm^{-3}.
Source of data	Peer-reviewed allometric model of Chave et al. (2005) for tropical moist forests, allowed by CP-AB for use where suitable local allometries are not available.
Value applied	Functional form of the equation as given above; no single scalar value.
Justification of choice of data or description of measurement methods and procedures applied	CP-AB permits use of published, peer-reviewed allometric equations that are appropriate to the project's eco-region and forest type. The Chave (2005) moist-forest allometric model is widely used and recommended for estimating above-ground biomass in tropical humid forests. It has been validated across numerous tropical sites and its suitability for Central African forest types has been confirmed by regional analyses such as Fayolle et al. (2013).
Purpose of data	Provides the conversion from tree-level field measurements (DBH, wood density) to AGB, which is then aggregated at plot and stratum level to derive CAB_tree,bsl,i and related carbon stock parameters required by BL-UP and M-REDD.
Comments	N/A

Data / parameter	Gg
Data unit	g kg^{-1} dry matter burned

Description	*Emission factor for gas g (CH_4 or N_2O)*
Source of data	*IPCC 2006 Guidelines, Volume 4, Chapter 2, Table 2.5*
Value applied	CH_4 = 6.8 g kg^{-1} d.m. N_2O = 0.2 g kg^{-1} d.m.
Justification of choice of data or description of measurement methods and procedures applied	*Default emission factors for biomass burning in tropical forest vegetation types, consistent with IPCC 2006. These values are recommended in VMD0013 when project-specific factors are unavailable.*
Purpose of data	*Calculation of baseline, project, and leakage non-CO_2 emissions from biomass burning*
Comments	

Data / parameter	$GHG_{peatsoil,bsl,CO2,i}$
Data unit	*t CO_2e yr^{-1}*
Description	*CO_2 emissions from microbial decomposition of peat soil in PDT stratum i in year t under the baseline scenario in PA*
Equation	*Defined in X-STR as an input to:* *Equation (13) for Ratepeatloss; Equation (22) for cumulative peat carbon loss Cpeatloss,i,t100.* *Under the approach used, GHGpeatsoil,bsl, CO2,i,t is implicitly approximated as:* *GHGpeatsoil,bsl CO2,i,t ≈ EFpeat × Aunplaned,peats,i,t* *where EFpeat = 51 t CO_2 ha^{-1} yr^{-1} (IPCC 2013 default) and and Aunplanned,peat,i,t is the area of drained peatland in PDT stratum i in year t until PDT*
Source of data	*IPCC 2013 Wetlands Supplement default emission factor for drained tropical peat (EF = 14 t CO_2-C ha^{-1} yr^{-1} corresponding to 51.3 t CO_2 ha^{-1} yr^{-1})*
Value applied	*0 (no deforestation occurring in peatland under baseline)*
Justification of choice of data or description of measurement methods and procedures applied	*No site-specific flux measurements were available for Lisala. Using the IPCC default for drained tropical peatlands is conservative and consistent with X-STR guidance where direct determination of Ratepeatloss is not feasible.*
Purpose of data	*To quantify peat soil CO_2 emissions associated with drained peatlands in the baseline / leakage scenarios, which are then converted into peat carbon loss*
Comments	

Data / parameter	*GWP*
Data unit	*Dimensionless*

Description	*Global Warming Potential for gas g (CH_4, N_2O)*
Source of data	*IPCC AR6*
Value applied	CH_4 = 27 N_2O = 273
Justification of choice of data or description of measurement methods and procedures applied	*GWP values must follow the latest version of IPCC AR (currently AR6)*
Purpose of data	*Conversion of non-CO_2 gas emissions into CO_2-equivalent units*
Comments	

Data / parameter	*LB Forest Cover Benchmark Map*
Data unit	*Binary raster map (Forest / Non-Forest), 30 m resolution*
Description	*Forest / non-forest benchmark map clipped to the LB delineated according to LK-ASU and BL-UP (minimum 50–100% of PA area, restricted to forest at the beginning of HRP and remaining forested at baseline start). Used to quantify baseline emissions in the LB and to assess activity-shifting leakage.*
Source of data	*Same TMF-derived forest/non-forest maps as for the RRD / PA, clipped to the LB polygon.*
Value applied	*Spatial dataset (annual rasters); no single numeric value.*
Justification of choice of data or description of measurement methods and procedures applied	*Using the same benchmark maps for PA and LB ensures that any difference in emissions between these zones is due to deforestation patterns and not to inconsistent mapping. Accuracy is above the 90% threshold required by BL-UP; hence the leakage analysis is based on high-confidence forest / non-forest information.*
Purpose of data	*To derive baseline deforestation areas in the LB, which are then combined with emission factors to estimate baseline leakage emissions in accordance with LK-ASU and M-REDD.*
Comments	*N/A*

Data / parameter	*PDT_i Peat Depletion Time for peat stratum*
Data unit	*Years*
Description	*Time required for complete depletion of peat at a given location due to oxidation after deforestation. Calculated by dividing the corrected peat thickness by the assumed peat subsidence rate. PDT determines the duration over which avoided soil organic carbon (SOC) emissions may be credited in peatland strata projected to undergo baseline deforestation.*

Equations	*Eq. (22) of Additional Procedures for Peatland (X-STR) for cumulative peat carbon loss VMD0016 v1.3 Sections 4.3 and 4.5 (peat stratification and crediting duration)* *Baseline SOC emission calculations for drained tropical peatlands*
Source of data	*Regional median peat-depth map (Crezee et al., 2022)* *Conservative corrections and peat-subsidence assumptions following VMD0016 v1.3*
Value applied	*Raster value corresponding to PDT (years)*
Justification of choice of data or description of measurement methods and procedures applied	*Regional median peat-depth map (Crezee et al., 2022) where 50 cm downward correction was applied according to VMD0016 to address spatial uncertainty and potential overestimation of peat thickness. The 5 cm/year subsidence rate is the conservative upper bound, shortening PDT and therefore limiting the duration of crediting for SOC emissions.* *PDT values were floored (rounded down) to further ensure conservative accounting.* *Water-table depth was not used for stratification due to lack of site-specific hydrological data; VMD0016 explicitly allows this when conservative peat-thickness corrections are applied.*
Purpose of data	*To determine the duration over which SOC emissions may be credited in each peat stratum*
Comments	

Data / parameter	*Project Forest Cover Benchmark Map*
Data unit	*Binary raster map (Forest / Non-Forest), 30 m resolution*
Description	*Forest / non-forest benchmark map clipped to the PA at the start of the baseline period (2024) and for each year used in baseline modelling. It provides the forest area at risk of deforestation in the PA and is overlaid with the spatial allocation results to compute Aunplanned,i,t.*
Source of data	*Same as Reference Region Forest Benchmark Map (JRC TMF, 30 m), processed and clipped to the PA boundary according to BL-UP definitions of the project geographic boundary.*
Value applied	*Spatial dataset (one raster per year); no single numeric value.*
Justification of choice of data or description of measurement methods and procedures applied	*Same classification workflow and accuracy assessment as for the regional map. The PA is entirely contained within the RRD / RRL; therefore, using the same benchmark series guarantees consistency between RRD, PA and LB and satisfies the requirement that baseline and project monitoring use compatible forest/non-forest definitions.*
Purpose of data	*To determine initial forest area in the PA, overlay spatial allocation of baseline deforestation to compute Aunplanned,i,t in each stratum, and to support ongoing monitoring of project performance against the baseline.*
Comments	*N/A*

Data / parameter	*PROPCS*
Data unit	*Dimensionless*
Description	*Ratio representing the relative difference in above-ground tree carbon stocks between accessible forest inside the LB and accessible forest outside it. Used to scale activity-shifting leakage emissions according to biomass density differences, as required under LK-ASU.*
Equations	*PROPCS=* C_{OLB} / C_{LB}
Source of data	*ESA CCI Biomass 2022 above-ground biomass carbon map (peer-reviewed, globally consistent), applied consistently across the LB and the national available forest (AVFOR).*
Value applied	*0.96*
Justification of choice of data or description of measurement methods and procedures applied	*The ESA CCI Biomass 2022 dataset provides spatially explicit, globally harmonized estimates of above-ground tree carbon, allowing a biophysically robust comparison of carbon densities across the DRC. Mean carbon stock values extracted for this project are:* $C_{I\beta}$ = *522* tCO_2e/ha *(inside LB)* C_{out} = *503* tCO_2e/ha *(national accessible forest outside LB)*
Purpose of data	*To adjust leakage emissions for differences in above-ground carbon stocks between forests potentially affected by activity shifting and forests outside the LB, in accordance with LK-ASU Step 3.*
Comments	

Data / parameter	*PROPLB*
Data unit	*Dimensionless*
Description	*Proportion of forest inside the LB compared to available forest (AVFOR) in the national territory*
Equations	*PROPLB = LBFOR / AVFOR*
Source of data	*National accessible forest map (AVFOR); forest inside the LB (LBFOR); TMF forest maps intersected with accessibility constraints.*
Value applied	*0.0025*
Justification of choice of data or description of measurement methods and procedures applied	*Forest inside the LB represents ~0.25% of all accessible forest at national scale. Accessibility is defined per LK-ASU buffering distance to roads and navigable rivers. Ratio is required for estimate ex-ante activity-shifting potential.*
Purpose of data	*To quantify the fraction of displaced unplanned deforestation that could plausibly occur within the LB.*
Comments	

Data / parameter	P_{RRL}
Data unit	*Dimensionless ratio*
Description	*Ratio of forest area in the RRL at the start of the baseline period to the total forest area in the RRD, as defined in BL-UP.*
Equations	$PRRL = A_{RRL,baseline} / A_{RRD,baseline}$ *Used in BL-UP Equation (4):* $ABSL,RR,unplanned,t = ABSL,RRD,unplanned,t \times PRRL$
Source of data	*Forest areas in RRL and RRD at baseline start (2024) derived from the Forest Cover Benchmark Map.*
Value applied	*1.24*
Justification of choice of data or description of measurement methods and procedures applied	*Definition and use follow BL-UP data parameter PRRL and Equation (4).* *Both forest areas are measured on the same benchmark map, ensuring internal consistency and avoiding bias from mixed data sources.*
Purpose of data	*Ensures that projected deforestation in the RRL is proportional to the forest area available, given projections at the RRD level.*
Comments	*N/A*

Data / parameter	$Ratepeatloss_{-BSL,i,}$
Data unit	$m\ yr^{-1}$
Description	*Rate of peat depth reduction in baseline stratum i in year t, due to oxidation following drainage, excluding initial short-term subsidence*
Equation	*Defined in X-STR (Equation 13)*
Source of data	*Module X-STR. For Lisala, direct estimation of Ratepeatloss-BSL,i,t was not undertaken; instead, peat carbon loss was approximated using IPCC default fluxes in line with X-STR "Additional Procedures for Peatland" and LK-ASU Step 5.*
Value applied	*N/A*
Justification of choice of data or description of measurement methods and procedures applied	*The project did not measure peat subsidence or volumetric carbon content. Following X-STR, where Ratepeatloss cannot be assessed directly, peat carbon loss is instead derived from CO_2 emission factors and Equation (22), using a conservative emission flux of 51 $tCO_2\ ha^{-1}\ yr^{-1}$ for drained tropical peatlands.*
Purpose of data	*Ratepeatloss-BSL,i,*
Comments	

Data / parameter	*Reference Region Forest Cover / Non-Forest Cover Benchmark Map*
Data unit	*Binary raster map (Forest / Non-Forest), 30-m resolution*

Description	*Georeferenced forest / non-forest map covering the Reference Region for Deforestation (RRD), the PA and the LB for all years of the historical reference period and baseline modelling (2014–2024). The map is used to derive annual forest area and deforestation, and to define the geographic boundaries of RRD, RRL, PA and LB, as required under BL-UP and M-REDD.*
Source of data	*JRC Tropical Moist Forest (TMF) dataset (Landsat-based time series, 1990–2024), processed to binary forest / non-forest maps using a national forest definition and methodological requirements of BL-UP and M-REDD.*
Value applied	*Raster Value: 1- Forest / 0 - Non-Forest*
Justification of choice of data or description of measurement methods and procedures applied	*TMF provides a consistent, wall-to-wall, 30 m forest cover and change time series over Central Africa, compliant with BL-UP requirements on spatial resolution and temporal coverage (≥3 dates over ≤12 years, ending ≤2 years before project start).* *Deforestation is mapped by overlaying successive annual forest masks; pixels transitioning from forest (year n–1) to non-forest (year n) are classified as deforested, as recommended in BL-UP Step 2.1.3.* *Map accuracy was assessed using a stratified random sample of reference points interpreted on very high-resolution imagery following Olofsson et al. (2014) and IPCC/GOFC-GOLD guidance; overall accuracy for forest and non-forest classes exceeds the 90% minimum required by BL-UP (OA≈96–97% on 2020 and 2024 maps)..*
Purpose of data	*To derive annual forest area and forest loss in the RRD, PA and LB (2014–2024), to define RRD and RRL boundaries and to provide the primary spatial input to calculation of baseline deforestation rates (BL-UP) and baseline emissions (M-REDD*
Comments	*N/A*

Data / parameter	T_{hrp}
Data unit	*years*
Description	*Duration of the historical reference period (HRP) in years, as required by BL-UP to derive historical deforestation rates.*
Source of data	*Defined from the temporal extent of the historical deforestation analysis based on the forest cover benchmark maps.*
Value applied	*11 years (2014–2024).*
Justification of choice of data or description of measurement methods and procedures applied	*BL-UP requires that the HRP cover at least 10 and at most 12 years, and that the first point in time be no more than 2 years prior to project start; 2014–2024 (11 years) conforms to these requirements.* *The availability of annual TMF-based maps over this period allows use of all years to improve regression robustness.*
Purpose of data	*Fix the historical reference period used to assess baseline*
Comments	*N/A*

3.3.2 Data and Parameters Monitored (VCS, 3.16)

Data/Parameter	$A_{burn,t,i}$
Data unit	*ha*
Description	*Area of forest land in stratum i assumed to be cleared using slash-and-burn practices in year t*
Equations	-
Source of data	*Remote sensing including Forest Cover Benchmark Map and other sources MODIS/VIIR)*
Description of measurement methods and procedures to be applied	*Due to the small spatial extent, short duration, and frequent cloud cover associated with slash-and-burn fires in humid tropical forests, direct burned-area mapping is not technically feasible. Therefore, burnt area is estimated as equal to the annual area of deforestation detected through satellite-based forest cover change analysis within the tropical dense forest stratum. This proxy-based approach assumes that conversion of project dense forest to non-forest land in the PA is overwhelmingly carried out using slash and burn. MODIS/VIIRS active fire and burned-area products are used exclusively as qualitative supporting evidence of fire prevalence and are not used for quantitative estimation.*
Frequency of monitoring/recording	*At least 5 years at every monitoring period.*
QA/QC procedures to be applied	*Consistency checks between annual deforestation maps and stratification layers; review of change detection outputs; and cross-checking with MODIS/VIIRS fire detections as qualitative validation of fire occurrence, confirming slash-and-burn as the overwhelmingly predominant land-clearing practice.*
Purpose of data	*Calculation of baseline, project, and leakage non-CO_2 emissions from biomass burning*
Calculation method	-
Comments	-

Data/Parameter	$A_{DefPA,i,t}$
Data unit	*ha*
Description	*Area of unplanned deforestation in the PA in stratum i, in year t, as observed ex-post*

Equations	-
Source of data	*Project Forest Cover Monitoring Maps, PA and stratum boundaries*
Description of measurement methods and procedures to be applied	*Derived by overlaying the Project Forest Cover Monitoring Maps with the PA boundary and Forest stratum map.*
Frequency of monitoring/recording	*At least 5 years at every monitoring period.*
QA/QC procedures to be applied	-
Purpose of data	*To quantify actual deforestation in each stratum of the PA, which is compared to baseline* $A_{unplanned,i,t}$ *to compute emission reductions from avoided deforestation.*
Calculation method	*GIS overlay and area calculation; no statistical sampling required beyond classification accuracy assessment.*
Comments	

Data/Parameter	$A_{DefLB,i,t}$
Data unit	*ha*
Description	*Area of unplanned deforestation in the LB in forest stratum i in year t, observed ex-post.*
Source of data	• *LB Forest Cover Monitoring Map (binary forest / non-forest, annual).* • *Forest stratification map (X-STR).* • *LB boundary.*
Description of measurement methods and procedures to be applied	*Identify pixels transitioning from forest to non-forest (t) during the monitored period and intersect result with LB boundary and stratum map and sum areas per stratum* I and compare with baseline unplanned deforestation.
Frequency of monitoring/recording	*Must be monitored at least every 5 years*
QA/QC procedures to be applied	-

Purpose of data	*Core activity data for estimating leakage emissions (ΔCP,LB) under LK-ASU and M-REDD.*
Calculation method	
Comments	*Estimate ex-ante to 10% of baseline deforestation in PA dis inside and outside the LB.*

Data/Parameter	$A_{Def,pa,i,t}$
Data unit	*ha*
Description	*Area of unplanned deforestation in the PA in forest stratum i in year t, observed ex-post.*
Source of data	• *Leakage Belt Forest Cover Monitoring Map (binary forest / non-forest, annual).* • *Forest stratification map (X-STR).* • *LB boundary.*
Description of measurement methods and procedures to be applied	*Identify pixels transitioning from forest to non-forest (t) during the monitored period and intersect result with PA boundary and stratum map and sum areas per stratum i.*
Frequency of monitoring/recording	*Must be monitored at least every 5 years*
QA/QC procedures to be applied	-
Purpose of data	*Core activity data for estimating project emissions (ΔCP,PA) under M-REDD.*
Calculation method	
Comments	*Estimate Ex-ante to 0*

Data/Parameter	$A_{DistPA,q,i,t}$
Data unit	*ha*

Description	*Area of forest disturbance within the PA in stratum* i*, year* t*, associated with disturbance category* q *(e.g. wildfire, storm damage, infrastructure, pests). Used when natural/exceptional events are treated separately from anthropogenic deforestation.*
Source of data	*Remote Sensing imagery combined with ground verification as e.g.:* *Project Forest Cover Monitoring Map* *Disturbance detection products (fire alerts, burn scar maps, NDVI anomalies, storm tracks)* *Field reports and incident logs*
Description of measurement methods and procedures to be applied	*Detect disturbance events through remote sensing (fire, windthrow, flood scars). Confirm through PRA or field reports when possible.* *Map disturbance polygons and intersect with PA and stratification layer.* *Categorize disturbance type* q.
Frequency of monitoring/recording	*Must be monitored at least every 5 years or if verification occurs on a frequency of less than every 5 years examination must occur prior to any verification event*
QA/QC procedures to be applied	*Field verification for major events when feasible.* *Comparison with external datasets (VIIRS, MODIS, Sentinel-2 burn index, precipitation anomalies).*
Purpose of data	*To differentiate natural/external disturbances from human-driven deforestation, enabling correct emissions accounting (e.g. force majeure, exclusion or reclassification under M-REDD).*
Calculation method	*GIS processing: disturbance polygons overlay with PA boundary and forest stratification.*
Comments	

Data/Parameter	A_{Pi}
Data unit	*ha*
Description	*Total area of forest of each stratum* i *within the PA at baseline start. Used to scale carbon stock estimates, distribute sampling intensity, and compute Aunplanned,i,t and ADefPA,i,t.*
Source of data	• *Forest stratification map following X-STR procedures* • *PA boundary* • *Forest Cover Benchmark Map*
Description of measurement methods and procedures to be applied	• *Overlay PA boundary with the stratification layer from X-STR.* • *Mask by forest cover.* • *Compute area per stratum* i *using GIS methods.*

Frequency of monitoring/recording	*At least 5 years at every monitoring period.*
QA/QC procedures to be applied	*Check that: $\Sigma_i A_{Pi}$ = total forest area in PA. and visual inspection of stratum boundaries against satellite images or field data.*
Purpose of data	*Required for Weighting stratum-specific carbon stocks, Calculating baseline and ex-post deforestation areas by stratum, and aggregating emissions and removals at PA scale.*
Calculation method	*GIS area computation from GIS data overlay.*
Comments	

Data/Parameter	A_{sp}
Data unit	m^2
Description	*Area of each sample plot (sp) used in the forest inventory for live biomass*
Equations	*Used in CP-AB Eq. (1) for plot-level carbon stock:* • *CAB_tree,sp,i = (Σ_{j,l} AGBj,l × CF) / Asp*
Source of data	*Inventory design and field protocol (plot dimensions specified in the inventory manual).*
Description of measurement methods and procedures to be applied	• *Establish fixed-area plots of specified dimensions.* • *Record actual plot area, adjusting for any inaccessible or excluded sections (water, cliffs, etc.).*
Frequency of monitoring/recording	*At each forest inventory campaign, at least at each baseline renewal*
QA/QC procedures to be applied	• *Training of field crews on plot layout and measurement of distances.* • *Random supervisor checks of plot shape and dimensions in the field.*
Purpose of data	*To convert total tree biomass measured within a plot to a per-hectare carbon stock estimate.*
Calculation method	-

Comments	*Known ex-ante at validation for carbon stock estimation.*

Data/Parameter	*$CAB_{,post,i}$*
Data unit	*t CO_2e ha^{-1}*
Description	*Long-term average above-ground tree carbon stock in the post-deforestation land-use class that actually occurs in stratum i under the project scenario. Only updated ex-post if monitoring reveals land uses significantly different from the baseline assumption.*
Source of data	• *National FREL values for CRCA (if land use matches baseline assumption).* • *Literature/IPCC defaults for other land uses.* • *CP-AB compliant field inventory if new land uses appear (e.g. perennial crops, plantations).*
Description of measurement methods and procedures to be applied	*Identify actual post-deforestation land-use class(es) using PRA, imagery, and/or time-series analysis. If CRCA remains dominant, keep baseline value. If new land uses emerge, obtain or measure AGBpost,i using CP-AB methods and convert to carbon.*
Frequency of monitoring/recording	*At least 5 years at every monitoring period.*
QA/QC procedures to be applied	• *Ensuring new AGBpost,i come from credible sources (FREL, IPCC, peer-reviewed, or CP-AB).* • *Cross-check PRA evidence and remote-sensing interpretation.*
Purpose of data	*To quantify remaining AGB after deforestation for accurate emission factor calculations.*
Calculation method	
Comments	

Data/Parameter	*CDW,post,i*
Data unit	*t CO_2e ha^{-1}*
Description	*Long-term average dead-wood carbon stock in the post-deforestation land-use class in stratum i. Set t zero for agriculture/fallow cycling. Used only if post-deforestation land use differs from that assumed in the baseline or if dead-wood persists in certain LU types (e.g. conversion to plantations with slash retention).*
Source of data	*Field surveys for relevant post-deforestation land use.* *National FREL or regional literature for post-deforestation land use* *Remote sensing if slash retention is identified.*

Description of measurement methods and procedures to be applied	*Identify post-deforestation LU class. If dominant land use remains agriculture/fallow set CDW,post,i = 0. If new LU retains woody debris, estimate BDWpost,i from CP-DW or literature.*
Frequency of monitoring/recording	*Only updated if LU transitions diverge significantly from CRCA.*
QA/QC procedures to be applied	
Purpose of data	*To represent residual dead-wood stocks in post-deforestation LU.*
Calculation method	
Comments	

Data/Parameter	$\Delta C_{LK\text{-}AS,unplanned}$
Data unit	tCO_2e
Description	*Net greenhouse gas emissions due to activity-shifting leakage arising from unplanned deforestation agents displaced outside the PA as a result of the REDD project activity.*
Source of data	*All monitored activity data and carbon-stock parameters and coefficients derived from Module LK-ASU*
Description of measurement methods and procedures to be applied	*According to the module Module LK-ASU*
Frequency of monitoring/recording	*At least every 5 years, or prior to each verification event when verification occurs more frequently.*
QA/QC procedures to be applied	*Cross-checks with independent remote-sensing sources, internal consistency checks between modules, verification of field inventory data, and recalculation audits to ensure reproducibility of emission estimates.*
Purpose of data	*Calculation of GHG emissions due to activity-shifting leakage*

Calculation method	*According to the module Module LK-ASU*
Comments	

Data/Parameter	$\Delta C_{P,LB}$
Data unit	*t* CO_2e
Description	*Net greenhouse gas emissions within the LB in the project case*
Source of data	*ADefLB,t from LB Forest Cover Monitoring Maps and.carbon stock estimated following CP-AB, CP-DW and other pool modules if relevant*
Description of measurement methods and procedures to be applied	*Applying procedures in module LK-ASU and M-REDD*
Frequency of monitoring/recording	*At least every 5 years, or prior to each verification event when verification occurs more frequently.*
QA/QC procedures to be applied	*According to Chapter 9.3 of REDD+ MF or other VCS methodology that uses this module*
Purpose of data	*Used to quantify leakage emissions occurring in the LB that must be deducted from gross GHG benefits of the project in line with LK-ASU and M-REDD.*
Calculation method	*According to module LK-ASU and M-REDD*
Comments	*Ex-ante Estimates provided in accordance to module LK-ASU*

Data/Parameter	*DBH*
Data unit	*cm*
Description	*Diameter at breast height (1.3 m above ground) of each live tree measured in the inventory, used as the main predictor in allometric equations to estimate tree above-ground biomass under CP-AB.*
Source of data	*Field measurements with diameter tape or callipers.*

Description of measurement methods and procedures to be applied	*Measure DBH at 1.3 m along the stem on the uphill side.* *Apply CP-AB special rules for trees with buttresses, deformities, forked stems, or leaning trunks (measure above irregularities, etc.).*
Frequency of monitoring/recording	*At every forest inventory campaign, at least at each baseline renewal.*
QA/QC procedures to be applied	• *Training and calibration of crews* • *Random re-measurement of a subset of trees by supervisors.* • *Data screening to detect outliers or impossible values.*
Purpose of data	*Core biometric variable to estimate tree-level biomass and, by aggregation, plot and stratum carbon stocks.*
Calculation method	*Used directly in allometric equation; resulting AGB is summed over all N trees and converted to carbon using CF and Asp.*
Comments	*Known ex-ante at validation for carbon stock estimation*

Data/Parameter	$Dia_{n,l,t}$
Data unit	*m*
Description	*Diameter of piece n of dead wood along the transect in stratum i, at time t in cm*
Source of data	*Field measurements in sample transect*
Description of measurement methods and procedures to be applied	*Lying dead wood must be sampled using the line intersect method (Harmon and Sexton 19964). Two 50-meter lines are established bisecting each sample plot and the diameters of the lying dead wood (≥10 cm diameter) intersecting the lines are measured. The first line is oriented along a random bearing, the second line is oriented perpendicular to the first.*
Frequency of monitoring/recording	*At each inventory campaign, at least at each baseline renewal.*
QA/QC procedures to be applied	*Standard quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied..*
Purpose of data	*Calculation of baseline and project emissions.*

Calculation method	
Comments	*Known ex-ante at validation for carbon stock estimation*

Data/Parameter	*H*
Data unit	*m*
Description	*Total height of trees or dead standing wood pieces, when required by allometric or volume equations.*
Source of data	*For some live-tree allometric models: H can appear as a predictor variable. For dead standing wood: Volume per snag ≈ Basal area × H × form factor.*
Description of measurement methods and procedures to be applied	*Field measurements with clinometer, hypsometer, laser rangefinder.*
Frequency of monitoring/recording	• *Measure or estimate total height of selected trees/snags according to CP-AB/CP-DW guidance.* • *Use standardized protocols for height estimation (e.g., tangent method, rangefinder).*
QA/QC procedures to be applied	*At each inventory campaign, at least at each baseline renewal.*
Purpose of data	*Training of crews in height estimation techniques.* *Random checks of estimated heights against instrument-based measurements.* *Detection and correction of obvious outliers.*
Calculation method	
Comments	*Known ex-ante at validation for carbon stock estimation. Height is mainly relevant for dead standing wood in CP-DW; live tree biomass uses DBH and wood density only*

Data/Parameter	$GHG_{WPS\text{-}REDD}$
Data unit	tCO_2e
Description	*Net GHG emissions in the REDD project scenario up to year t**

Source of data	*All monitored activity data and carbon-stock parameters generated according to the M-REDD monitoring procedures and CP-AB, CP-DW modules.*
Description of measurement methods and procedures to be applied	*According to the module M-REDD*
Frequency of monitoring/recording	*At least every 5 years, or prior to each verification event when verification occurs more frequently.*
QA/QC procedures to be applied	*Cross-checks with independent remote-sensing sources, internal consistency checks between modules, verification of field inventory data, and recalculation audits to ensure reproducibility of emission estimates.*
Purpose of data	*Calculation of project GHG emissions*
Calculation method	*According to the module M-REDD*
Comments	

Data/Parameter	H_{SDW}
Data unit	*m*
Description	*Height of dead standing wood pieces (snags, stumps) measured during the dead-wood inventory, used together with BDia and decay class to estimate volume and biomass in CP-DW.*
Source of data	*Field measurements or trained visual estimates of snag height.*
Description of measurement methods and procedures to be applied	*Height measured from ground level to either the top of a standing bole or to the base of crown if crown is persistent. Height is measured either directly or by using an instrument such as a clinometers, relascope or laser inventory instrument*
Frequency of monitoring/recording	*At each forest inventory campaign, at least at each baseline renewal*
QA/QC procedures to be applied	*Standard quality control / quality assurance (QA/QC) procedures for forest inventory including:* • *Training of field staff in snag height estimation.* • *Periodic checks using hypsometer/rangefinder.* • *Removal or correction of obviously erroneous heights.*

Purpose of data	*To calculate the volume and biomass of dead standing wood in each decay class and stratum, contributing to CDW,bsl,i.*
Calculation method	-
Comments	*Known ex-ante at validation for carbon stock estimation*

Data/Parameter	*LB Forest Cover Monitoring Map*
Data unit	*Binary raster map (Forest / Non-Forest), 30 m resolution*
Description	*Annual forest / non-forest map for the LB for each monitoring period, used to detect ex-post unplanned deforestation in the LB and quantify leakage (ADefLB,i,t and related terms) under LK-ASU and M-REDD.*
Equations	*No direct numerical equation; input to: M-REDD, Section 2.1–2.2, for ex-post mapping of activity data BL-UP, Step 4.1–4.3, for comparison of ex-post deforestation with baseline*
Source of data	*TMF/JRC data if available or Satellite imagery (Landsat / Sentinel or equivalent) processed to forest / non-forest maps following the same classification rules used ex-ante (i.e. TMF-compatible).*
Description of measurement methods and procedures to be applied	*Use annual cloud-free image mosaics for the monitoring year. Produce annual "forest" vs "non-forest" raster for the PA. Apply the same forest definition, preprocessing and classification method as used for the benchmark maps. Identify deforestation as pixels changing from forest (t-1) to non-forest (t).*
Frequency of monitoring/recording	*Once per monitoring period (typically every 5 years, or more frequently if monitoring reports are issued more often).*
QA/QC procedures to be applied	*Visual inspection of classification results over the PA. Accuracy assessment based on a stratified random sample and very-high-resolution images, following Olofsson et al.-type methods and IPCC/GOFC-GOLD guidance. Ensure overall accuracy ≥ 90 % for "forest" and "non-forest", consistent with baseline requirements.*
Purpose of data	*To detect and quantify ex-post forest cover change in the LB relative to the baseline and to derive all forest area terms used in ex-post emission and leakage calculations.*
Calculation method	*GIS overlay of annual monitoring maps with LB boundary and strata maps to derive areas ADefLB,i,u,t,*
Comments	*Monitoring maps must remain consistent with the ex-ante benchmark maps (i.e. same forest definition and resolution).*

Data/Parameter	*MANFOR*
Data unit	*ha*
Description	*Total area of forests under active management nationally*
Source of data	*Official data, peer reviewed publications and other verifiable sources*
Description of measurement methods and procedures to be applied	*A demonstration is required that areas will be protected against deforestation. Such a demonstration must include the existence of forest guards in sufficient numbers to prevent illegal colonization and an active management plan detailing harvest plans and return intervals, and/or evidence that the concession owner has previously evicted illegal colonists/squatters from the forest areas.* *Ex-ante it can be assumed that MANFOR must remain constant*
Frequency of monitoring/recording	*Must be monitored at least every 5 years*
QA/QC procedures to be applied	*In accordance with Section 9.3 of REDD+ MF or other VCS methodology that uses this module*
Purpose of data	*To calculate leakage emissions*
Calculation method	-
Comments	*MANFOR = 0 at validation for ex-ante leakage emissions estimation*

Data/Parameter	*Project Forest Cover Monitoring Map*
Data unit	*Binary raster map (Forest / Non-Forest), 30 m resolution*
Description	*Annual forest / non-forest map for the PA for each monitoring period, used to detect ex-post deforestation, degradation (where detectable) and regeneration, and to quantify ADefPA,i,u,t and other area variables under M-REDD and BL-UP.*
Equations	*No direct numerical equation; input to: M-REDD, Section 2.1–2.2, for ex-post mapping of activity data BL-UP, Step 4.1–4.3, for comparison of ex-post deforestation with baseline*
Source of data	*TMF/JRC data if available or Satellite imagery (Landsat / Sentinel or equivalent) processed to forest / non-forest maps following the same classification rules used ex-ante (i.e. TMF-compatible).*

Description of measurement methods and procedures to be applied	*Use annual cloud-free image mosaics for the monitoring year. Produce annual "forest" vs "non-forest" raster for the PA. Apply the same forest definition, preprocessing and classification method as used for the benchmark maps. Identify deforestation as pixels changing from forest (t-1) to non-forest (t).*
Frequency of monitoring/recording	*Once per monitoring period (typically every 5 years, or more frequently if monitoring reports are issued more often).*
QA/QC procedures to be applied	*Visual inspection of classification results over the PA. Accuracy assessment based on a stratified random sample and very-high-resolution images, following Olofsson et al.-type methods and IPCC/GOFC-GOLD guidance. Ensure overall accuracy ≥ 90 % for "forest" and "non-forest", consistent with baseline requirements.*
Purpose of data	*To detect and quantify ex-post forest cover change in the PA relative to the baseline and to derive all forest area terms used in ex-post emission and leakage calculations.*
Calculation method	*GIS overlay of annual monitoring maps with PA boundary and strata maps to derive areas ADefPA,i,u,t,*
Comments	*Monitoring maps must remain consistent with the ex-ante benchmark maps (i.e. same forest definition and resolution).*

Data/Parameter	*PROTFOR*
Data unit	*ha*
Description	*Total area of fully protected forests nationally*
Source of data	*Official data, peer reviewed publications and other verifiable sources*
Description of measurement methods and procedures to be applied	*A demonstration is required that areas will be protected against deforestation. Such a demonstration must include either:* *1. Designation as a UNESCO World Heritage Site, or* *2. Management by an international NGO, or* *3. Evidence that the government has immediately acted to evict any and all illegal squatters* *Ex ante it can be assumed that PROTFOR must remain constant*
Frequency of monitoring/recording	*Must be monitored at least every 5 years*
QA/QC procedures to be applied	*In accordance with Section 9.3 of REDD+ MF or other VCS methodology that uses this module*

Purpose of data	*To calculate leakage emissions*
Calculation method	*-*
Comments	*PROTFOR = 0 at validation for ex-ante leakage emissions estimation*

Data/Parameter	*TOTFOR*
Data unit	*ha*
Description	*Total available national forest area*
Source of data	*Official data, peer reviewed publications, remotely sensed imagery (coarse scale imagery is appropriate) or cadastral maps and other verifiable sources.*
Description of measurement methods and procedures to be applied	*Limited to forest areas within 5 km of roads and rivers suitable for conversion to agriculture / livestock* *Ex ante it was be conservatively assumed that TOTFOR remain constant for the baseline period.*
Frequency of monitoring/recording	*Must be monitored at least every 5 years*
QA/QC procedures to be applied	*In accordance with Section 9.3 of REDD+ MF or other VCS methodology that uses this module*
Purpose of data	*To calculate leakage emissions*
Calculation method	*-*
Comments	*TOTFOR estimate ex-ante using TMF/JRC data consistently with regional forest cover benchmark map*

Data/Parameter	*PROPIMM*
Data unit	*dimensionless (0–1)*

Description	*Proportion of deforestation carried out by immigrant agents (people who have settled in the area for less than 5 years), as defined under LK-ASU. These agents are considered mobile and more likely to shift activities outside the PA, generating leakage.*
Source of data	*Participatory Rural Appraisal (PRA), community interviews, focus groups, village committees, and any socio-economic source that identifies the origin of deforestation agents.*
Description of measurement methods and procedures to be applied	*Conduct structured PRA sessions in all communities where deforestation occurs to determine the proportion of deforestation due to the agent has lived in the village <5 years..*
Frequency of monitoring/recording	*Must be monitored at least every 5 years*
QA/QC procedures to be applied	*Cross-check household statements with field observations and local institutional knowledge.* *Use if possible two independent sources (e.g., focus group + individual interviews).*
Purpose of data	*To determine the share of deforestation attributable to mobile agents, which directly informs leakage potential under LK-ASU.*
Calculation method	-
Comments	*Ex-ante estimated based on PRA for ex-ante calculation of leakage emissions*

Data/Parameter	*PROPRES*
Data unit	*dimensionless (0–1)*
Description	*Proportion of deforestation carried out by resident agents (people who have settled in the area for more than 5 years), as defined under LK-ASU.*
Source of data	*Participatory Rural Appraisal (PRA), community interviews, focus groups, village committees, and any socio-economic source that identifies the origin of deforestation agents.*
Description of measurement methods and procedures to be applied	*Conduct structured PRA sessions in all communities where deforestation occurs to determine the proportion of deforestation due to the agent has lived in the village >5 years.*
Frequency of monitoring/recording	*Must be monitored at least every 5 years*

QA/QC procedures to be applied	*Cross-check household statements with field observations and local institutional knowledge.* *Use if possible two independent sources (e.g., focus group + individual interviews).*
Purpose of data	*To determine the share of deforestation attributable to resident agents.*
Calculation method	-
Comments	*Ex-ante estimated based on PRA for ex-ante calculation of leakage emissions*

3.3.3 Monitoring Plan (VCS, 3.16, 3.20)

3.3.3.1 Monitoring

The monitoring plan for the Lisala REDD+ Project is developed in accordance with VM0007 v1.8 and the applicable modules. The monitoring system is designed to generate accurate, transparent and verifiable evidence of (i) project implementation, (ii) actual carbon stock changes and GHG emissions within the PA, (iii) leakage carbon stock changes and GHG emissions within the LB, and (iv) ex-post estimates of net emission reductions for each monitoring period using the same procedures ex-ante and ex-post, as required by the methodology.

The monitoring plan covers four mandatory monitoring tasks: (1) monitoring of project implementation, (2) monitoring of actual carbon stock changes and GHG emissions, (3) monitoring of leakage carbon stock changes and GHG emissions, and (4) ex-post estimation of net carbon stock changes and GHG emissions. For each monitoring task, the plan defines: the technical monitoring approach, the data and parameters to be collected, and the data collection procedures. Uncertainty management, Quality Assurance and Quality Control (QA/QC) procedures, data archiving requirements, and organisational responsibilities are subsequently described and apply across all monitoring tasks

Monitoring Tasks

Monitoring Task 1: Monitoring of Project Implementation

Monitoring of project implementation is carried out to demonstrate that the Lisala REDD+ Project is implemented as described in the project design and that the actions planned to reduce unplanned deforestation are effectively executed on the ground. This monitoring provides verifiable evidence that activities are implemented in the correct locations, at the intended scale, and with the planned frequency. It also confirms that the project remains compliant with VM0007 applicability conditions and with the project's safeguard commitments throughout the crediting period.

The project boundary, the stratification (forest strata and any internal zones), and the LB boundary were delineated ex-ante using GIS datasets and field verification. These spatial entities are stored in the

project geodatabase and constitute the official spatial reference for all monitoring and accounting tasks. The same spatial reference system and data standards are applied to all monitoring layers. Where strata maps or activity layers are refined over time (for example, through improved interpretation of satellite imagery or additional field verification), updates are documented, version-controlled and archived. Such refinements do not result in ex-post modification of areas for which emission reductions have already been credited.

Implementation monitoring covers all core activity types that support avoided unplanned deforestation. This includes the establishment and maintenance of community agreements and governance arrangements, participatory land-use planning activities, agroforestry and assisted natural regeneration interventions, agricultural improvement measures designed to reduce pressure on forests, capacity building and training activities, routine patrols and forest surveillance, and fire prevention measures such as awareness activities and maintenance of firebreaks where applicable. Implementation monitoring also includes explicit checks of continued compliance with key applicability conditions relevant to the project design, notably that project activities do not involve intentional burning, that no drainage or hydrological modification is undertaken in wetlands, and that nitrogen fertilizers are not applied within the project boundary.

To document implementation, the project collects a consistent set of monitoring data and parameters. These include georeferenced polygons and GPS points representing the location of implemented activities, implementation records describing each activity (date, location, activity type, and description), attendance sheets and participation logs for community engagement and trainings, patrol logs and surveillance records, fire prevention and incident-response records, and documentation of any detected disturbances and corrective actions taken. Evidence supporting continued compliance with applicability conditions is recorded through field observations, operational registers and incident reporting.

Data collection relies on three complementary procedures. First, the MRV Unit performs an annual remote sensing review of forest cover and disturbances using the same data sources, processing rules and interpretation logic applied for baseline mapping, thereby ensuring methodological consistency between baseline and monitoring periods. Second, field teams conduct missions using GPS-enabled devices and standardized forms to record activity implementation, confirm locations, and document compliance observations. Third, community-based monitoring committees provide routine field observations from patrols and day-to-day presence in the landscape, supported by geo-tagged photographs and short incident narratives that can be checked and triangulated with remote sensing outputs.

Quality control and quality assurance procedures are applied before any data are accepted into the MRV database. Field forms are checked for completeness and internal consistency, and GPS coordinates are cross-checked against the official project boundary, strata layers and activity polygons. Reported activities are reviewed for plausibility against annual work plans and implementation targets. Disturbance reports are validated through follow-up field verification where feasible and/or through high-resolution imagery review when available. All datasets must be reviewed and signed off by the relevant supervisor before they are uploaded to the MRV database and used in subsequent accounting.

All implementation monitoring evidence is archived in a structured and auditable manner. Spatial layers are stored in a version-controlled geodatabase with associated metadata. Signed activity forms, meeting minutes, agreements, training records, patrol logs and incident reports are stored both digitally (with

routine backups) and physically in hardcopy archives. The archiving system is designed to preserve records for the full project lifetime and to enable independent verification teams to trace each monitoring claim back to original evidence.

Clear organisational roles are assigned to ensure accountability. The MRV manager is responsible for the overall supervision of monitoring, for ensuring that procedures are applied consistently, and for integrating all datasets into the MRV system. The GIS expert is responsible for maintaining the spatial database, managing version control of GIS layers, and supporting spatial cross-checks. Eco-guards and thematic coordinators (agroforestry, agriculture, governance) are responsible for collecting, validating and submitting field records related to their activity areas. LDCs contribute to field observations and incident reports, which are reviewed and validated by project staff prior to inclusion in the official monitoring database.

Table 75 - Summary of monitoring data, parameters, and data collection frequency for project implementation

DATA / PARAMETER	DESCRIPTION / PURPOSE	METHOD / DATA SOURCE	FREQUENCY
Project boundary & strata maps	*Confirm stability of project boundary and detect any need for strata update*	*TMF-JRC, Sentinel-2, GPS field verification*	*Annual*
Activity polygons	*Map implemented activities (planting, agroforestry, regeneration, firebreaks)*	*GPS tablets, GIS digitization*	*Continuous / Annual consolidation*
Infrastructure & accessibility	*Document roads, rivers, settlements for planning and monitoring*	*Remote sensing, field GPS tracks*	*When changes occur; annual review*
Intervention records	*Track timing, location, and description of all project activities*	*Standardized field forms, MRV database*	*Continuous*
Community participation	*Track involvement of local institutions and beneficiaries*	*Participation logs, meeting minutes*	*Continuous; annual consolidation*
Agroforestry & restoration data	*Number of seedlings planted, species used, survival rates*	*Field surveys, nursery registers*	*2–3 times/year; annual reporting*
Agricultural intensification	*Monitor improved practices, yields, reduction in shifting agriculture*	*Farmer logs, extension reports*	*Semi-annual*
Forest disturbances	*Detect illegal logging, clearings, fires, storm or pest events*	*high-resolution imagery (PlanetScope / Google Earth)*	*Annual RS analysis + continuous reports*
Hydrology & soil observations	*Monitor compliance with "no drainage" applicability condition*	*Field observations, soil/hydrology notes*	*Annual*
Community agreements	*Track governance structure and tenure security progress*	*Formal agreements, meeting reports*	*Annual*
Safeguard & biodiversity observations	*Document wildlife presence, degradation indicators*	*Field biodiversity checklists*	*Annual*

Monitoring Task 2: Monitoring of Actual Carbon Stock Changes and GHG Emissions

Monitoring of actual carbon stock changes and greenhouse gas (GHG) emissions is the core technical component of the MRV system of the Lisala REDD+ Project. Its objective is to quantify, for each

monitoring period, the net changes in forest carbon stocks and any associated GHG emissions occurring within the PA under the project scenario. This monitoring is implemented consistently ex ante and ex post, in full accordance with VM0007 and the methodological guidance provided in Module M-REDD, ensuring full alignment between baseline and project scenario accounting.

The monitoring framework builds directly on the stratification, reference carbon stocks, emission factors and accounting assumptions established during the baseline phase and validated at project registration. These elements provide the structural basis for estimating net carbon stock changes (ΔC) and GHG emissions associated with deforestation, natural disturbances and any project-related non-CO_2 emission sources. Results from this monitoring feed directly into the ex-post calculation of emission reductions, using the VM0007 accounting relationship that compares baseline, project and leakage emissions for each monitoring period.

Within the PA, monitoring focuses on the carbon pools that are most significant in humid tropical forest ecosystems. Above-ground biomass (AGB) is the primary pool and is monitored through a combination of remote sensing-based activity data and periodic field inventories. Below-ground biomass (BGB) is estimated using IPCC-recommended root-to-shoot ratios to ensure methodological consistency. Dead organic matter, including standing and lying deadwood, is monitored through dedicated field measurements designed to capture changes in quantity and decay status over time. Soil carbon is not monitored as a dynamic pool for non-wetland areas, in line with VM0007 and M-REDD requirements, while peat-related emissions are addressed separately where relevant and shown to be de minimis for this project.

Monitoring also includes verification of potential non-forest GHG emission sources associated with project activities. These include emissions from fossil fuel combustion, nitrogen fertilizer use and biomass burning. In line with the project design and prior significance assessments, fossil fuel use and fertilizer application are expected to remain negligible or absent. Nevertheless, these sources are actively monitored to confirm their continued insignificance, and to ensure that any deviation from expectations would be detected and quantified using the appropriate modules (E-FFC, E-NA and E-BPB) if required.

Data collection for monitoring actual carbon stock changes and GHG emissions relies on an integrated set of spatial, biophysical and operational datasets. Spatial data provide annual information on forest cover and forest cover change within the PA, derived primarily from the JRC Tropical Moist Forest (TMF) dataset, using the same classification rules and change-detection procedures applied in the baseline. These data identify forest-to-non-forest transitions and allow the project to quantify activity data (areas affected by deforestation or disturbance) for each stratum and monitoring period. Supplementary satellite imagery, such as Sentinel-2 or Landsat 8/9, is used to verify localised changes and support interpretation without altering the TMF-based accounting framework.

Field inventory data provide the empirical basis for estimating biomass and carbon stock changes. Permanent or temporary sample plots, established following the baseline sampling design, are re-measured at defined intervals. For each tree meeting the minimum diameter threshold, species, diameter at breast height (DBH), height and condition are recorded. Deadwood measurements document dimensions, decay class and density. These measurements are used to derive AGB using peer-reviewed allometric equations and wood-density values from recognized databases, while BGB is calculated using default ratios. All biomass estimates are converted to carbon using a consistent carbon fraction and then expressed in CO_2 equivalents using standard molecular weight conversion factors.

Operational data are collected to document any GHG emissions not directly related to forest carbon stocks. Fuel consumption records for vehicles, boats or generators are maintained to verify that emissions from fossil fuel combustion remain negligible. Agricultural activity records and field observations confirm the absence of nitrogen fertilizer use. Fire-related data are collected through incident reports, patrol observations and cross-checks with remote sensing fire-detection products, allowing the project to confirm the absence of project-induced burning or, if fire occurs, to quantify non-CO_2 emissions in accordance with VMD0013.

Data collection procedures are designed to ensure accuracy, consistency and reproducibility across monitoring periods. Each monitoring cycle begins with the update of forest-cover and forest-loss layers using the latest TMF annual products, following the same preprocessing, classification and validation workflow applied at validation. Change detection is performed by comparing successive annual forest masks, producing spatially explicit maps of deforestation or disturbance within the PA. These outputs are reviewed for plausibility and, where necessary, cross-checked using higher-resolution imagery and field observations.

Field inventories are conducted by trained teams following documented standard operating procedures. Plot locations are recorded using GPS-enabled devices configured in a consistent coordinate system, and measurements are reviewed in the field by a supervisor before being digitized. Once entered into the MRV database, data undergo systematic screening to identify transcription errors, outliers or inconsistencies, which are corrected or flagged prior to analysis.

The MRV Manager oversees the entire process, ensures compliance with methodological requirements and validates final datasets prior to reporting. The GIS/RS Specialist is responsible for producing and validating spatial activity data. The Inventory Coordinator manages field inventory campaigns and biomass calculations. Field teams and community monitors support data collection and disturbance detection.

Table 76 - Summary of monitoring data, parameters, and data collection frequency for actual carbon stock changes

DATA / PARAMETER	DESCRIPTION / PURPOSE	METHOD / DATA SOURCE	FREQUENCY
Annual forest-cover maps	*Identify forest/non-forest transitions*	*TMF-JRC, Landsat, Sentinel-2*	*Annual*
Strata delineation	*Maintain baseline stratification used in biomass calculations*	*Remote sensing, field validation*	*Reviewed annually*
Plot & transect locations	*Maintain geospatial integrity of sample design*	*GPS tablets (WGS-84/UTM 34N)*	*At each campaign*
Tree-level measurements	*DBH, height, species; basis for AGB estimation*	*Plot inventories using project inventory protocol*	*Every 5 years or before verification*
Deadwood measurements	*Quantify decay classes and biomass of downed wood*	*Standard deadwood sampling*	*Every 5 years*
Soil/hydrology qualitative notes	*Support peat risk assessment & applicability*	*Field notes & observation sheets*	*Each campaign*
Fuel consumption	*Quantify project emissions from fossil fuels*	*Fuel logs, generator readings*	*Monthly / Annual aggregation*

Fire incidents	*Quantify emissions from uncontrolled burning*	*MODIS/VIIRS + field verification*	*Continuous; annual consolidation*
Energy/transport	*Hours of engine use, distance travelled*	*Field logs*	*Monthly*

Monitoring of Leakage Carbon Stock Changes and GHG Emissions

Monitoring of leakage carbon stock changes and greenhouse gas (GHG) emissions aims to identify, quantify and account for any emissions occurring outside the PA that are attributable to the implementation of the Lisala REDD+ Project. In accordance with VM0007 and Module LK-ASU, this monitoring task focuses on activity-shifting leakage associated with the displacement of unplanned deforestation drivers, in particular smallholder agricultural expansion and related forest clearing, from the PA to surrounding lands.

Leakage monitoring is spatially anchored to the LB established during the baseline phase and validated at project registration. The LB delineates the area where displacement of activities is most likely to occur, based on accessibility, ecological similarity and socio-economic linkages with the PA. The boundary of the LB fixed ex ante and remains unchanged throughout the crediting period, ensuring consistency between baseline assumptions and ex-post leakage assessment.

The monitoring approach combines spatial analysis, field observations and socio-economic information to provide a comprehensive and conservative assessment of leakage. Remote sensing serves as the primary tool for detecting changes in forest cover within the LB, while socio-economic monitoring supports the interpretation of observed land-use changes and helps establish causal links between project activities and potential displacement of deforestation drivers.

Spatial monitoring of leakage relies on the same land-cover datasets, classification rules and change-detection procedures used for the PA and the baseline analysis. Annual forest/non-forest maps are generated for the LB using the JRC Tropical Moist Forest (TMF) dataset, ensuring full methodological consistency. Forest-to-non-forest transitions are identified by comparing successive annual TMF-derived forest masks, allowing the project to quantify observed deforestation within the LB for each monitoring period. Where necessary, higher-resolution satellite imagery (e.g. Sentinel-2, Landsat 8/9 or PlanetScope) is used to verify localized changes and to confirm that mapped transitions correspond to real land-use conversions.

In addition to spatial data, leakage monitoring includes the collection of socio-economic and activity-related information from communities located within and adjacent to the LB. Household and community surveys, conducted at regular intervals, document land-use practices, agricultural expansion, migration patterns and changes in livelihood. These data help assess whether observed deforestation trends are plausibly linked to displacement effects caused by project implementation, rather than to unrelated external drivers.

Data collection procedures for leakage monitoring follow standardized and documented protocols. Remote sensing analyses are conducted annually by the GIS/RS Specialist using the same workflows applied in the PA. Field visits and community consultations are coordinated by the socio-economic and livelihoods

teams, using semi-structured questionnaires and standardized reporting formats. All leakage-related data are georeferenced where possible and integrated into the central MRV database to ensure temporal and spatial alignment with project-area monitoring data.

The MRV Manager has overall responsibility for integrating leakage monitoring into the project's GHG accounting framework and for ensuring compliance with LK-ASU requirements. The GIS/RS Specialist produces and validates spatial deforestation data for the LB. Social facilitators and field teams conduct surveys and community consultations, while community monitors contribute local observations of land-use change.

Table 77 - summary of monitoring data, parameters, and data collection frequency for leakage carbon stock changes

DATA / PARAMETER	DESCRIPTION / PURPOSE	METHOD / DATA SOURCE	FREQUENCY
LB	*Delineation of the LB area*	*Land cover/use, Accessibility and geomorphological similarity criteria with* PA	*Fixed*
Forest/Non-forest Maps	*Detect deforestation outside* PA	*TMF-JRC RS analysis*	*Annual*
Household land-use surveys	*Detect shifts in agriculture or forest-resource use*	*Semi-structured questionnaires*	*Every 5 years*
Migration & population trends	*Identify external drivers of leakage pressure*	*Local administration records, surveys*	*Every 5 years or when major change occurs*
Market/production trends	*Assess use of forest products, crop expansion*	*Community group interviews*	*Every 5 years*
Leakage database	*Centralizes leakage spatial and socio-economic info*	*MRV database integration*	*Annual*

Monitoring Task 4: Ex-Post Estimation of Net Carbon Stock Changes and GHG Emissions

The ex-post estimation of net carbon stock changes and greenhouse gas (GHG) emissions constitutes the final integrative step of the monitoring framework. Its purpose is to consolidate all information collected under the other monitoring tasks and to quantify, for each monitoring period, the verified net GHG emission reductions achieved by the Lisala REDD+ Project. This task is implemented in accordance with VM0007 v1.8 and the accounting framework defined in Module M-REDD, ensuring full methodological consistency between baseline, project and leakage scenarios.

Ex-post estimation is based on the standard REDD+ accounting equation, whereby net emission reductions for a given monitoring period are calculated as the difference between baseline emissions and the sum of project-scenario emissions and leakage emissions. The process integrates spatial data on land-use change, forest inventory measurements, operational emission records and leakage assessments into a single, coherent emissions balance expressed in tonnes of CO_2 equivalent.

The calculation begins with the compilation of activity data derived from annual forest-cover change analyses. For the PA, deforestation detected through remote sensing are quantified by stratum and

combined with the corresponding carbon-stock values to estimate project-scenario carbon stock changes. The same approach is applied to the LB to quantify any emissions attributable to activity-shifting leakage. These activity data are directly linked to the stratification and emission factors established during the baseline phase, ensuring continuity across accounting periods.

Carbon stock changes are quantified using the most recent and validated forest inventory data. Above-ground biomass, below-ground biomass and deadwood estimates are applied according to the procedures defined in Module M-REDD and related carbon pool modules. Where no deforestation is detected in the PA, project-scenario emissions from these sources are zero by definition. Any natural disturbances observed during the monitoring period are assessed and, where relevant, incorporated into the accounting using conservative assumptions.

Non-CO_2 greenhouse gas emissions are included in the ex-post accounting where applicable. Emissions of methane (CH_4) and nitrous oxide (N_2O) associated with biomass burning are quantified using Module E-BPB whenever fire-based land clearing is detected in the PA or the LB. Emissions from fossil fuel combustion and direct N_2O emissions from fertilizer use are monitored through operational records and included only if they are observed and material; otherwise, they are conservatively set to zero, consistent with the project design and significance assessments.

All calculations are performed using standardized, transparent and traceable calculation tools maintained within the project's MRV system. Input datasets are linked through unique identifiers, allowing each emission estimate to be traced back to its underlying spatial, biophysical or operational source. The MRV Manager conducts consistency checks to ensure that units, timeframes and spatial references are aligned across all datasets prior to final computation.

Table 78 - Summary of monitoring data, parameters, and data collection frequency for ex-post estimations

DATA / PARAMETER	DESCRIPTION / PURPOSE	METHOD / DATA SOURCE	FREQUENCY
Deforested area by stratum	*Core area deforestation input for leakage emission calculations*	*TMF-JRC annual forest-cover change*	*Annual / Per monitoring period*
Biomass/carbon densities	*Stratum-level emission factors for CP-DW*	*Field inventory, allometric models*	*Every 5 years*
E-FFC, E-NA, E-BPB	*Non-forest GHG emissions from project ops*	*Fuel logs, fertilizer logs, fire data*	*Annual*
ASL-related deforestation	*Quantify leakage emissions*	*Leakage belt RS analysis + surveys*	*Annual / 5-year socioecon.*
Sampling errors	*Error propagation & deduction*	*Inventory statistics*	*Every campaign*
Classification accuracy	*RS accuracy assessment*	*Confusion matrix*	*Annual*
QA/QC logs	*Evidences for verification & audit trail*	*Internal review records*	*Annual*
ER_t values	*Verified emission reductions*	*VM0007 + M-REDD modules*	*Per verification cycle*

Uncertainty and Quality Assurance and Quality Control (QA/QC)

Quality management procedures are applied to ensure that all monitoring data and calculations are accurate, consistent across monitoring periods, and reproducible by an independent verifier. Uncertainty is managed by prioritising project-specific measurements for key parameters whenever feasible and by applying conservative values where the use of default factors is necessary. The project identifies key parameters that materially influence emission reduction estimates, including activity data derived from forest/non-forest change mapping, carbon density by stratum, remote-sensing map accuracy metrics, and forest inventory sampling error. Procedures are implemented to reduce uncertainty as far as practicable. Where residual uncertainty remains significant, data selection and methodological assumptions are applied conservatively to avoid any over-estimation of net project benefits.

To ensure methodological consistency over time and to mitigate risks related to staff turnover, the project maintains documented Standard Operating Procedures (SOPs) covering: (i) remote sensing workflows, (ii) field inventory measurements and re-measurement, (iii) data entry and database management, (iv) error checking and outlier detection, and (v) calculation and reporting routines. Field teams and data analysts receive training prior to each monitoring campaign; the scope, dates, and attendance records of all trainings are documented. A check-cruise protocol is implemented to assess measurement accuracy in field plots and to trigger corrective actions where deviations exceed acceptable thresholds. Data are systematically screened for transcription errors, outliers, and inconsistencies across monitoring periods, and any corrections are fully documented with audit trails.

All original datasheets (paper forms) and electronic files are archived for the full project lifetime. Electronic data are backed up using redundant storage systems, with restricted access and periodic integrity checks.

The Quality Assurance and Quality Control (QA/QC) system constitutes a core component of the Lisala REDD+ Project's MRV framework. Its objective is to guarantee the integrity, accuracy, and traceability of all monitoring data used in the quantification of carbon stock changes and greenhouse gas emissions. QA/QC procedures are embedded at every stage of the monitoring process, from data acquisition in the field, through processing and validation, to integration into the central MRV database and final use in GHG calculations. The subsections below describe the QA/QC procedures applied to each major data category.

QA/QC for Spatial Data

Spatial datasets constitute the backbone of activity data for REDD+ monitoring. Given their central role in identifying deforestation and land-cover change, the project implements standardized QA/QC protocols to ensure their reliability.

All raster and vector layers used in the monitoring process are systematically verified to ensure that they follow the required coordinate reference system (WGS-84 / UTM Zone 34N). This verification is carried out at the moment of data import, allowing the GIS Specialist to immediately detect inconsistencies emerging from sensor type, data source, or temporal misalignment. Ensuring projection consistency is important to avoid geometric distortions that could bias activity-area estimates.

Spatial change-detection outputs derived from the TMF dataset are reviewed primarily to validate the reliability of the forest and non-forest classes used in the monitoring period. To achieve this, the MRV Unit focuses its quality checks on areas where class assignments may be uncertain, for example, zones

affected by cloud-shadow contamination, mixed pixels, or inconsistent temporal behavior. These targeted checks rely on automated filters and expert review of selected samples to confirm that the forest/non-forest and subsequent cover changes classification remains robust.

Cross-checking with field observations collected during routine missions and community patrols provides additional confirmation. These ground-truth points are used to verify that the classification of forest and non-forest areas aligns with conditions observed on the ground, thereby supporting the overall reliability of the change-detection outputs for carbon accounting.

Any inconsistencies identified during this process trigger a re-evaluation of classification thresholds or a targeted field revisit.

QA/QC for Field Inventory Data

The reliability of biomass estimates depends on the quality of measurements collected during inventory campaigns. To ensure rigor and reproducibility, the project applies a combination of supervisory controls, internal redundancies, and automated verification.

During each field mission, the Forest Inventory Coordinator reviews all measurement sheets and digital entries on site, checking for completeness, coherence, and measurement consistency. Ambiguous values, illegible entries, or omissions are corrected immediately while the field team is still in the field, thereby minimizing post-campaign errors.

To validate measurement precision, at least 5% of plots are re-measured independently by a second team member. This duplicate-measurement check allows the detection of systematic bias or measurement drift. Variations beyond accepted tolerances, such as deviations exceeding 1 cm for DBH, lead to a targeted reassessment and, if necessary, full remeasurement of the affected subplot.

Once the field data are uploaded to the MRV database, they undergo automated range and logic checks. These include verifying acceptable DBH limits, height/DBH ratios, species codes, plot identifiers, and internal consistency across datasets. All flagged values are reviewed by the MRV Manager before the dataset is approved for biomass estimations.

QA/QC for Socio-Economic and biodiversity data

Because socio-economic and biodiversity data rely in part on interviews, participatory inputs, and qualitative field observations, the project applies specific quality assurance and quality control procedures to ensure data credibility, consistency, and traceability, and to minimize respondent or observer bias.

For socio-economic data, a sample comprising at least 10% of surveyed households is selected for back-checking. The social facilitators conduct short follow-up interviews with these households to verify the accuracy and consistency of responses recorded during the initial survey. Any discrepancies are documented and analyzed to identify potential misunderstandings, enumerator bias, or weaknesses in survey administration. Where systematic issues are identified, corrective actions are taken, including refresher training for enumerators prior to subsequent survey rounds. Socio-economic information is further cross-checked through consultations with community leaders, local management committees, women’s and youth groups, and, where relevant, local administrative authorities.

For biodiversity and environmental data, QA/QC procedures focus on consistency, plausibility, and spatial verification of observations. Field records from biodiversity surveys and community monitoring are reviewed by the Biodiversity and Environmental Monitoring Coordinator to ensure completeness and internal consistency. Species observations and habitat assessments are cross-checked against known species distributions, habitat types, and baseline ecological conditions. Where applicable, geo-tagged photographs, GPS coordinates, and repeat observations are used to validate records.

All socio-economic and biodiversity datasets are reviewed and approved before integration into the MRV database, ensuring that only verified and quality-controlled information is used for reporting, safeguards assessment, and verification.

QA/QC for Emission Source Data

Operational data used to estimate non-CO_2 emissions are subject to dedicated QA/QC procedures, given their administrative origin and potential variability.

Fuel consumption logs are reconciled annually. The Logistics Officer compares fuel-use records with procurement receipts, generator and vehicle logs, and equipment operating hours. Any discrepancy, such as inconsistent consumption patterns or incomplete entries, is clarified before the data are integrated into E-FFC calculations.

As the project does not utilize nitrogen fertilizers, no fertilizer-related emissions are expected, and E-NA remains equal to zero. Nevertheless, the MRV Manager periodically verifies that no procurement, distribution, or application of synthetic fertilizers has occurred. This precautionary check ensures that, if fertilizer use were ever introduced, all relevant data could be integrated into E-NA accounting in a transparent and traceable manner.

Incident reports relating to burning events are cross-checked with available remote sensing data (e.g. MODIS/VIIRS).

Data Archiving & management

The objective of an effective archiving and management of monitoring data is to ensure that all information used for GHG accounting remains secure, traceable, and reproducible throughout the project lifetime and during the post-crediting retention period required under the VCS Program.

In accordance with VCS rules, all spatial, biophysical, socio-economic, operational, and administrative datasets generated by the project will be archived for at least seven (7) years after the end of the final crediting period. This long-term preservation ensures that all information used for ex-post greenhouse gas accounting remains verifiable and can be accessed by independent auditors, regulatory bodies, and internal project teams.

The archive includes, but is not limited to, forest-cover maps, stratification files, raw and processed field-inventory data, community monitoring reports, socio-economic survey datasets, fuel-consumption logs, verification records confirming the absence of fertilizer use, fire-incident reports, QA/QC documentation, intermediate and final GHG-calculation spreadsheets and scripts, and all monitoring and verification

reports submitted to the VCS Program. Each document is stored in its original format and accompanied by metadata to ensure full traceability.

All datasets are stored within a centralized MRV Data Management System composed of a secure local server housed at the project headquarters and a mirrored backup system maintained off-site. Sensitive files are encrypted, and user access is restricted to authorized personnel in accordance with the project's data-security policy.

Spatial datasets (raster and vector formats) are stored in standardized geospatial formats such as GeoTIFF, ESRI Shapefile, and GeoPackage, while numerical and tabular data follow open, non-proprietary formats such as CSV, XLSX, or relational database tables. Clear and consistent naming conventions are applied across all datasets, incorporating file type, version number, date of creation, and the responsible person.

To prevent accidental data loss caused by hardware failure, human error, or external threats, the project applies a structured backup protocol. Monthly backups of the entire MRV database are stored on encrypted external drives maintained in a separate secure location. The Data Manager performs routine integrity checks to confirm that backup files are complete and retrievable. Any corruption or inconsistency will immediately trigger corrective actions, which are documented in a dedicated backup log.

Organization and Responsibilities

The effective implementation of the Monitoring Plan depends on a structured organizational framework that clearly defines the roles and responsibilities of each actor involved in the project's MRV system. Below is a detailed description of the responsibilities assigned to the principal roles within the MRV governance structure.

MRV Manager (sWc France): The MRV Manager oversees the entire Monitoring, Reporting, and Verification system and ensures full methodological integrity. This position provides guidance and technical supervision across all monitoring tasks. Core responsibilities include ensuring compliance with methodology and standard, validating the completeness and quality of all datasets, supervising and documenting all QA/QC processes, coordinating with external auditors during verification cycles, and approving final monitoring reports and GHG calculation files before submission.

GIS & Remote-Sensing Specialist: This specialist is responsible for producing, processing, and analyzing all spatial data used in land-cover and land-use monitoring. Key functions include preparing forest-cover maps using high-resolution imagery; conducting change-detection analyses to identify deforestation and degradation; performing accuracy assessments; updating spatial stratification when justified by new evidence; maintaining the spatial database; and supporting field teams with GPS training and ground-truth collection.

Forest Inventory Coordinator: The Forest Inventory Coordinator ensures the scientific rigor of all biomass measurement activities. Responsibilities include designing and supervising field inventory campaigns; managing the establishment and remeasurement of sample plots; verifying the accuracy of measures; ensuring correct digitization and validation of field records; coordinating spatial integration of plot locations; and maintaining inventory equipment.

Field Inventory Teams: Field teams carry out on-the-ground measurements and are responsible for collecting tree-level and plot-level data following standardized protocols. They record all required metadata, document disturbances, ensure the completeness of field forms, and collaborate with the Forest Inventory Coordinator for data validation and plot relocation.

Community Monitoring Committees: Local committees play an important role in participatory monitoring. They conduct regular patrols, report forest disturbances using geo-tagged tools, participate in the monitoring of project activities and safeguards, provide local knowledge during field missions, and help verify observations from remote sensing and field inventories.

Social facilitator: This role supervises all socio-economic project-related and leakage-related monitoring. Responsibilities include designing and administering surveys, monitoring drivers, assessing livelihood and safeguard indicators, facilitating participatory feedback processes, and preparing socio-economic reports for periodic monitoring and verification submissions.

This role oversees biodiversity and environmental monitoring activities associated with the project. Responsibilities include coordinating biodiversity surveys and habitat assessments, compiling observations from field teams and community monitors, tracking key ecological indicators and HCVs, and ensuring consistency with the project's biodiversity objectives and safeguard commitments.

Data Manager: The Data Manager ensures the integrity, security, and accessibility of all datasets within the MRV system. Duties include maintaining the MRV database, enforcing version-control procedures, conducting periodic backups and integrity checks, harmonizing datasets, integrating spatial and non-spatial data, administering access rights, and documenting all data transformations and metadata.

3.3.3.2 Revising the baseline for future project crediting periods

In accordance with the VCS Standard and VM0007 requirements for Avoiding Unplanned Deforestation (AUDD) projects, the baseline of the Lisala REDD+ Project is subject to periodic reassessment. Deforestation drivers, agents and underlying causes evolve over time as a result of changes in accessibility, demographic dynamics, land-use systems, governance conditions and market forces. For this reason, the baseline will be revised at least at the end of each baseline validity period, and no later than every six years, to ensure that credited emission reductions remain conservative and reflect the most recent observed deforestation dynamics.

Each baseline reassessment will apply the same methodological structure, logic and key procedures as used for the initial baseline, in full accordance with VM0007 and Module BL-UP. This ensures methodological continuity, comparability across crediting periods and transparency, while allowing updated input data to be incorporated where required. No changes to the underlying baseline approach will be introduced unless explicitly permitted by the applicable methodology and justified by updated evidence.

For each reassessment, the historical reference period will be updated to include the most recent years of observed forest-cover change, while maintaining a continuous time series of at least ten years. The same primary forest-cover dataset used in the initial baseline (TMF/JRC) will be applied, unless a successor dataset of equal or superior quality becomes acceptable under VM0007. Forest and non-forest definitions, spatial resolution, projection system and preprocessing rules will remain consistent with the

initial baseline, and an independent accuracy assessment will be conducted for the updated benchmark to ensure robustness and comparability over time.

The reassessment will verify whether the RRD remains representative of the PA with respect to deforestation agents, land-use practices, forest types, biophysical conditions, accessibility patterns and governance context, as required by Module BL-UP, unless the applicable methodology or VCS Program rules in force at the time of reassessment require an alternative approach. If significant deviations are identified, the RRD may be re-delineated using the same quantitative similarity criteria and thresholds applied in the initial baseline, unless revised methodological guidance prescribes different criteria or thresholds. Any such adjustment will be fully documented and justified.

The same statistical framework used in the initial baseline will be reapplied to the updated historical deforestation time series, including testing the significance of a linear regression trend and applying the same decision rules for selecting either a regression-based projection or the mean historical deforestation rate, unless the applicable methodology or standard at the time of reassessment introduces revised statistical requirements. The outcome of this process remains strictly data-driven and neutral with respect to the direction of the trend.

Spatial allocation of baseline deforestation will be recalibrated using updated historical transitions and the same modelling approach applied in the initial baseline, unless the methodology or VCS Program rules applicable at the time of reassessment require the use of a different modelling technique. Predictor variables will remain thematically consistent, model performance will be documented and validated using the same metrics, and baseline deforestation will again be spatially allocated by ranking pixels according to predicted risk until the projected annual baseline deforestation area is reached, subject to any updated methodological constraints.

Finally, forest stratification, post-deforestation land-use classification and carbon pools included in the baseline will remain consistent with those applied in the initial baseline, unless a change is justified by verified monitoring evidence or updated nationally approved data.

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

The Project's climate monitoring plan, as well as the results obtained through its implementation, will be made available on a publicly accessible online platform, such as the Verra VCS registry and will be updated following each monitoring cycle.

At the local level, summaries of the monitoring plan and monitoring results will be communicated to communities and other stakeholders through LDCs meetings, community assemblies, and consultations with customary and administrative authorities. Information will be shared in an appropriate format and language adapted to local contexts (French and Lingala), including oral presentations where necessary, to ensure understanding by all community groups. It is also planned to put bulletin boards in all the villages to display the necessary information for the local communities.

This approach ensures transparency and facilitates stakeholder engagement.

3.4 Optional Criterion: Climate Change Adaptation Benefits

3.4.1 Regional Climate Change Scenarios (CCB, GL1.1)

According to the *Report on Climate Change Scenarios in the Congo Basin* [86], based on climate projections from the Intergovernmental Panel on Climate Change (IPCC) CMIP3 and CMIP5 model ensembles, the Congo Basin is expected to experience significant warming and increasing climate variability during the 21st century.

All models consistently project a significant increase in near-surface air temperature by the end of the century. Average annual temperature is projected to increase by approximately +1.5°C to +3°C under optimistic emission scenarios and +3.6°C to +6°C under pessimistic scenarios.

Projections of annual precipitation show greater uncertainty. Most scenarios indicate relatively moderate changes in total annual rainfall across the basin (generally within ±10%), although the northern dry areas could experience larger increases. However, climate models consistently project changes in rainfall patterns, including more intense rainfall events, more frequent dry spells during the rainy season, and greater interannual variability.

In the absence of the Project, increased climate variability and more frequent extreme events may affect local land-use dynamics. Irregular rainfall patterns, and drought periods may reduce agricultural stability and productivity in surrounding regions, potentially increasing pressure on forest resources through agricultural expansion, fuelwood collection, and other forest-dependent livelihood activities.

3.4.2 Climate Change Impacts (CCB, GL1.2)

Impacts on Community Well-Being

Local communities are highly dependent on rain-fed agriculture, forest resources, and ecosystem services, making them particularly sensitive to climate variability.

Projected increases in rainfall variability and more frequent dry spells during the rainy season may disrupt rain-fed agricultural systems and lead to fluctuating yields for staple crops such as cassava, maize, and rice. This variability may increase the risk of food insecurity during climatically unfavorable years and contribute to greater economic vulnerability of rural households.

Climate variability may also contribute to increased prevalence of climate-sensitive diseases. In particular, higher temperatures may favor the spread of water-borne diseases and vector-borne diseases such as malaria.

Impacts on Biodiversity Conservation Status

Climate change may also affect forest ecosystems and biodiversity in the PZ and surrounding regions. Changes in temperature and rainfall patterns may alter ecological conditions, potentially affecting the distribution, productivity, and composition of certain plant species and forest ecosystems. Higher temperatures may increase ecological stress on forest ecosystems, potentially reducing their resilience to disturbances. However, empirical evidence indicates that intact humid forests of the Congo Basin show strong resilience to climatic variability, due to their dense canopy structure, high humidity, and relatively stable soil moisture conditions

Indirect impacts on biodiversity may also occur if climate-related livelihood pressures lead communities to increase their reliance on forest resources. Expansion of agricultural activities, fuelwood collection, or

[86] CSC (2013): Climate Change Scenarios for the Congo Basin. [Haensler A., Jacob D., Kabat P., Ludwig F. (eds.)]. Climate Service Centre Report No. 11, Hamburg, Germany, ISSN: 2192-4058.

other resource extraction could place additional pressure on forest ecosystems in the absence of effective forest management and conservation measures.

3.4.3 Measures Needed and Designed for Adaptation (CCB, GL1.3)

Measures Supporting Community Adaptation

The Project will support participatory land-use planning through the development and implementation of community NRMPs. These plans will optimize sustainable land use, reduce unplanned agricultural expansion, and improve the management of natural resources under changing climatic conditions.

To address potential climate-related disruptions to rain-fed agriculture, the Project will promote improved agricultural practices through farmer training, including soil management techniques and agroforestry systems that enhance soil fertility, water retention, and crop resilience to rainfall variability. Agricultural extension support will also be strengthened to provide continuous technical assistance to producers facing changing climatic conditions. The Project will further promote the diversification of livelihood activities to reduce dependence on climate-sensitive agricultural production. This diversification will help improve household resilience to climate variability and economic shocks.

Through the LDF, the Project will support investments in community infrastructure and social services, such as schools and health centers, contributing to improved social and economic resilience in the face of climate-related stresses. The Project will also support family planning awareness initiatives, which can contribute to reducing long-term pressure on natural resources.

Measures Supporting Ecosystem and Biodiversity Adaptation

The long-term protection of forests within the conservation concession will help maintain ecosystem integrity and resilience to climate variability. By reducing deforestation and forest degradation, the Project will support the conservation of intact forest ecosystems that are better able to withstand climatic disturbances and continue providing essential ecosystem services.

The Project will also promote sustainable community-based natural resource management to ensure that forest resources are used in a manner that maintains ecological stability under changing environmental conditions.

Together, these measures aim to strengthen the resilience of both communities and biodiversity to the projected impacts of climate change in the PZ.

4 COMMUNITY

4.1 Without-Project Community Scenario

4.1.1 Descriptions of Communities at Project Start (CCB, CM1.1)

Economic activities

At the start of the Project, the Concession is inhabited by rural communities whose livelihoods depend primarily on natural resources. About 80%-90% of households are engaged in agriculture[87], cultivating mainly manioc, maize, rice, and groundnuts. Fishing and hunting remain important complementary activities, particularly for households located near rivers and forested areas, where fish and bushmeat contribute significantly to protein intake.

Household size is relatively large, with an average of 5.5 persons per household, but household income is generally low and unevenly distributed. Surveys conducted as part of the ESIA revealed that the average household income in 2025 is estimated at 202 645 CDF per month, or approximately 1050 USD per household per year. Farming appears to be the main economic activity for almost all the villages surveyed, but accounts for only 62% of income. Small-scale farming is characterized by low yields and essentially subsistence farming. Mostly rice, cassava and maize are cultivated while perennial crops are less common as they do not provide an immediate yield when first planted. Half of the produce is intended for sale and the other half for self-consumption.

The processing of agricultural products is also a source of income (12%). For example, local alcohol, which is produced in all villages and then sold in Kisangani and Kinshasa is a highly profitable commodity. Surveys reveal that trade also accounts for 12% of household income, but is limited by the infrastructures. Income from hunting and fishing amounts to 6% of household income, transport to 5% and the timber trade to 3%.

Despite the diversity of livelihood activities, most households remain economically vulnerable and face constraints to agricultural expansion, including limited access to inputs, tools, and markets.

Well-being and quality of life

Well-being is low, with significant material and social deprivation. Access to basic services is limited as underlined in UNICEF studies[88]: 61% of households rely on unimproved drinking water, 12% use unimproved sanitation facilities. Electricity is largely unavailable, and cooking relies on firewood or charcoal. Health conditions are precarious, with high prevalence of malaria, respiratory infections, and diarrheal diseases. Vaccination coverage is also very low, as most villages are located in zero-dose vaccination zones. Women face particular challenges, including high fertility (average 6.3 children per woman), early pregnancy (29% of girls aged 15–19), and widespread gender-based violence (32% of women aged 15–49 have experienced physical violence). Youth experience limited access to employment and education opportunities, contributing to seasonal migration or informal work.

Community characteristics and social organization

Communities are organized around customary governance structures. Village and clan chiefs regulate land and resource access, resolve conflicts, and oversee cultural and spiritual practices. Livelihoods and daily life are closely linked to forests, rivers, and sites of cultural or spiritual significance. Informal groups, women's associations, and LDCs provide social support and opportunities for collective action, although

[87] Field surveys as part of data collection for the ESIA, 2025
[88] Demographic and Health Survey data for Mongala Province, UNICEF, 2023–2024

participation remains constrained by poverty and limited institutional capacity. Despite this limited diversity, Lingala serves as the common language, ensuring communication among all groups. For more information, please refer to 2.1.15.

4.1.2 Interactions between Communities and Community Groups (VCS, 3.19; CCB, CM1.1)

At the start of the Project, communities in the Lisala concession are organized under a customary socio-political system in which the village is the primary unit of governance. Authority is hierarchical, with the Groupement Chief linking customary governance with the State system and exercising both administrative and spiritual authority to all the villages gathered in the Groupement.

At the village level, Customary Chiefs and Land Chiefs regulate access to forest resources and land, manage conflicts, and enforce customary land tenure rules.

Social and cultural diversity within communities is reflected in gender roles, age groups, ethnic affiliation, and customary land rights.

A strong gender-based division of labor exists: women play a central role in household organization, agricultural production (planting, weeding, harvesting), product transport, processing, and commercialization, as well as childcare. Men are primarily engaged in fishing, hunting, and land clearing. Despite their central economic role, women do not hold customary land rights and are generally marginalized from political, administrative, and customary decision-making structures. Their participation in inter-village meetings is limited, resulting in low representation in existing local committees. Some women seek collective representation through women's associations.

Youth represent a distinct group with specific interactions and expectations, expressing strong interest in employment and income-generating opportunities.

4.1.3 High Conservation Values (CCB, CM1.2)

Table 79 - HCV 4 - Areas that provide critical ecosystem services

High Conservation Value	Riparian forests along rivers and streams
Qualifying Attribute	These forests contribute to flood regulation and reduce riverbank erosion, which supports fishing activities and protects downstream villages and agricultural areas. These forests also provide natural water filtration, reduce contamination, and help maintain reliable water supply, thereby reducing health risks for local communities.
Focal Area	Forest strips along rivers and streams

High Conservation Value	Flooded forests and wetlands

Qualifying Attribute	These ecosystems regulate hydrological cycles, support fish breeding areas, and help attenuate floods and seasonal droughts, contributing to food security and income generation.
Focal Area	Seasonally flooded forests, wetlands, and lowland areas connected to rivers and floodplains.

Table 80 - HCV 5 - Areas fundamental for community livelihoods

High Conservation Value	Forest-cultivated land mosaics
Qualifying Attribute	Forest-cultivated land mosaics are essential for the survival of local communities who rely on subsistence agriculture, wild harvesting (NTFP), and hunting within these landscapes. With no alternative livelihood options, these mosaics provide the sole source of food, income, and daily sustenance for dependent populations. Their preservation is therefore critical to safeguarding both ecological balance and local ways of life.
Focal Area	APZ identified under the NRMPs

High Conservation Value	Fishing areas
Qualifying Attribute	Fishing provides an essential source of protein and income for households, particularly those living near water bodies.
Focal Area	Rivers, floodplains, spawning grounds, and seasonally inundated areas traditionally used for fishing.

High Conservation Value	Hunting areas
Qualifying Attribute	These areas contribute to household food security through bushmeat and are part of long-established subsistence practices.
Focal Area	Forest areas traditionally used for hunting, particularly forests located near villages and customary hunting zones.

High Conservation Value	Areas for NTFP collection (wild palms, fruits, medicinal plants)
Qualifying Attribute	These areas support food consumption, traditional medicine, and small-scale income generation for households.
Focal Area	Forest areas near villages where NTFPs are traditionally collected.

HCV 6 - Areas critical for traditional cultural identity

High Conservation Value	Sacred forests
Qualifying Attribute	Forest areas protected by customary law, considered as habitats of ancestors' spirits and used for rituals, spiritual invocations and traditional practices; access regulated by customary authorities
Focal Area	Sacred forests - such as Ewowo near Bokenga - identified through community consultations (NRMPs)

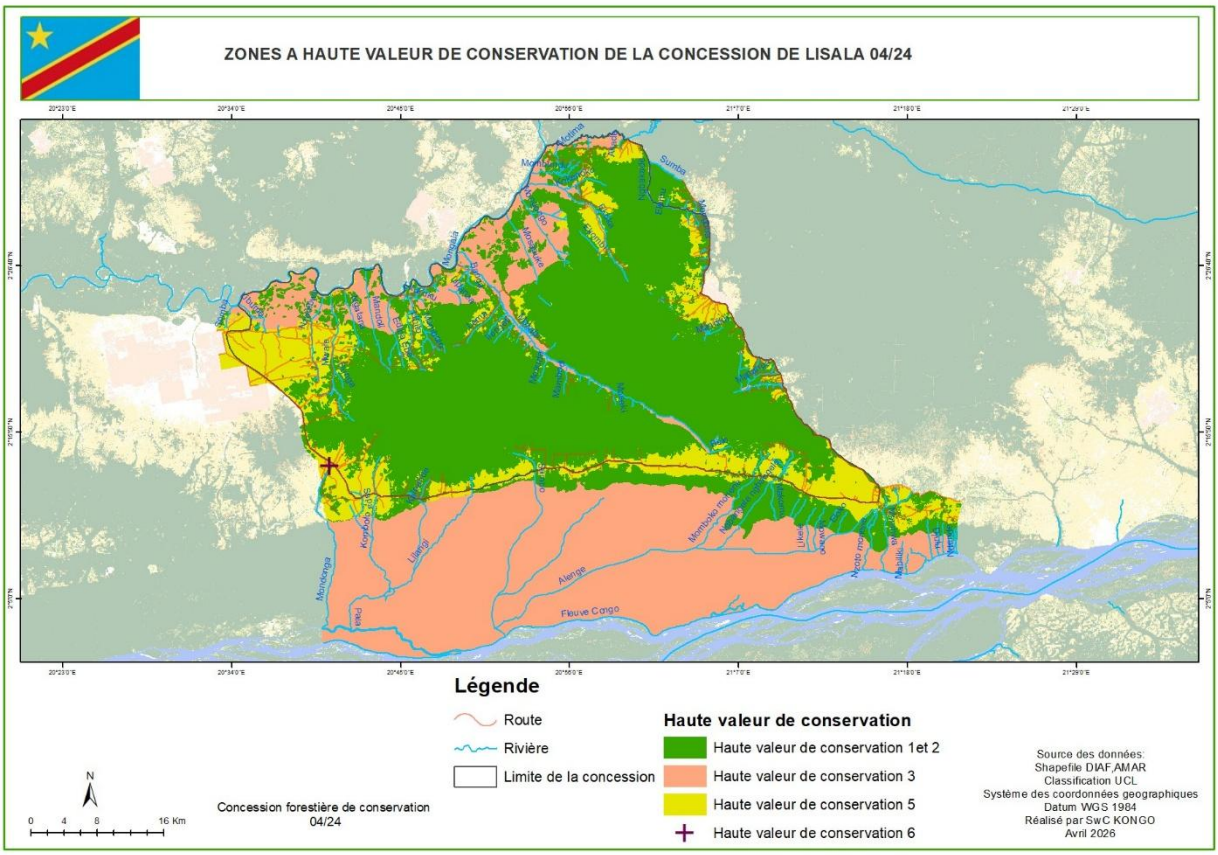


Figure 26 - HCV map

On this map showing HCV areas within the PZ, it can be observed that the central part of the concession falls under HCV 1 and 2, corresponding to the primary forest at the core of the conservation concession. In the southern and northern parts of the PZ, HCV 3 areas mainly consist of swamp forests, as well as riverbanks along rivers. HCV 5 areas coincide with the APZs.

4.1.4 Without-Project Scenario: Community (CCB, CM1.3)

Under the without-project scenario, the well-being of communities in the Lisala concession is expected to continue deteriorating due to persistent socio-economic and infrastructural challenges.

Over past decades, the population has experienced increasing isolation and limited access to basic services. Health infrastructure is insufficient: the 13 health posts and 14 health centers[89] and dispensaries in the Concession are largely in poor condition, lacking essential equipment, maternity

[89] Data collection within the framework of the NRMPs in 2026

facilities, and specialized care. Accessibility is limited, forcing patients to travel long distances on foot or by bicycle to reach functional facilities in Lisala or even Kinshasa, while high medication costs often push communities to rely on traditional medicine.

Education services are similarly limited. Almost all villages provide basic education (82% of the villages have at least a primary school, 52% have a secondary school), but infrastructure is dilapidated, poorly equipped, and teacher motivation is low due to irregular or insufficient salaries. Only 8 villages offer higher education school; requiring students to travel to larger villages, which, combined with limited financial means, early marriage, and household priorities, leads to high dropout rates.
Access to water and electricity is almost entirely absent. Villagers rely on untreated water sources, leading to health risks such as amoebiasis, while electricity is available only through small personal generators or limited solar panels.
Transport infrastructure is poor. Internal roads are mostly trails suitable only for walking or cycling, with few vehicle-accessible sections. Maintenance is irregular, previously supported by forestry companies and now only partially by local initiatives. Cellular phone coverage is poor within the Concession, limiting communication and access to information.

In the absence of the Project, the continued pressure on land and forest resources - including slash-and-burn agriculture, hunting, fishing, and charcoal production - is expected to further degrade livelihoods and ecosystem services. This threatens long-term food security for local populations. Communities are for example already experiencing a depletion of game in forests, a critical source of protein. Moreover, without increased income, access to education and healthcare will continue to deteriorate.

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts (CCB, CM2.1)

The impacts described below are predicted impacts resulting from planned project activities and were discussed with affected community groups through a questionnaire on project impacts conducted as part of the ESIA.

Table 81 - Expected impacts on farmers and natural resource-based livelihoods

Community group	Community members whose livelihoods depend directly on agriculture and the use of natural resources: farmers, fisherfolk, hunters, charcoal producers, timber and NTFP harvesters. Households practicing subsistence and cash crop agriculture with customary land rights represent approximately 90% of households in the PZ.
Impact(s)	The Project is expected to have significant positive impacts on smallholder farmers and other community members whose livelihoods depend on natural resources: - The Project will improve food security for local populations by sustainably intensifying production per unit area ; through the introduction of improved cuttings and seeds, combined with agroecological soil fertilization practices. - The Project will enable communities to generate additional income, both through PES and by developing and introducing perennial crops (such as coffee, oil palm, and cocoa) to ensure sustainable household

	revenues. Over the next five years, 2,700 farmers (30% of whom are women) are expected to have already benefited from PES, given that 1,350 hectares of perennial crops are expected to be planted by 2030[90]. The number of farmers benefiting from PES will increase as the project progresses. - The Project will support the structuring of agricultural value chains to strengthen market access and profitability. Moreover, accessibility and market access will be improved through the rehabilitation and maintenance of roads, facilitating the transport and commercialization of agricultural products (mainly cocoa and palm oil).
Type of benefit/cost/risk	Predicted, direct (employment, agricultural income) and indirect (infrastructure, transport) impacts. These are positive and constitute clear benefits.
Change in well-being	Overall, these impacts are expected to lead to improved well-being through increased and more stable household incomes, enhanced food security, and improved resilience to economic and environmental shocks. Better access to markets and sustained ecosystem services will strengthen long-term livelihood security and reduce vulnerability among households dependent on agriculture and natural resources

Table 82 - Expected Impacts on women

Community group	Women in local communities, historically marginalized in governance and land access
Impact(s)	The Project will: - strengthen women's participation in local governance through quotas in LDCs (at least 30%), - provide greater access to economic opportunities for women (PES-related employment) - improve access to health services (including maternal health and family planning initiatives)
Type of benefit/cost/risk	Predicted, direct (governance and economic participation) and indirect (access to services) impacts. These are positive and constitute benefits.
Change in well-being	Women are expected to experience greater decision-making power and autonomy, improved economic independence, and enhanced social well-being. Their inclusion will help reduce historic marginalization and support long-term empowerment.

Table 83 - Expected Impacts on youth (15-24)

[90] sWc Kongo objectives by 2030

Community group	Young women and men (15-24 years old)[91] from local communities
Impact(s)	The Project will create employment opportunities, support the development of practical skills, and facilitate access to local economic opportunities. For young girls, employment opportunities will help delay the age of first childbirth.
Type of benefit/cost/risk	Predicted, direct impacts constituting benefits.
Change in well-being	Youth are expected to experience increased economic integration, higher incomes, and improved future prospects. Enhanced employment and skill-building opportunities will reduce economic vulnerability and contribute to social development.

Overall, the Project is expected to generate net positive impacts on all identified community groups over its lifetime. By addressing key drivers of poverty, marginalization, and limited economic opportunities, the Project contributes to improved livelihoods, enhanced social inclusion, and strengthened local governance. These anticipated outcomes are consistent with community priorities expressed during consultations and provide a robust foundation for achieving long-term improvements in community well-being compared to the without-project scenario.

4.2.2 Negative Community Impact Mitigation (VCS, 3.19; CCB, CM2.2)

The Project is designed to ensure that community well-being is safeguarded and enhanced, and that any potential negative social impacts are identified, prevented, and mitigated, particularly with regard to health, safety, security, and the protection of vulnerable and marginalized groups.

A first potential risk identified relates to the unequal distribution of project benefits, which could increase tensions or conflicts between community groups if some groups are perceived to benefit more than others.
To mitigate this risk, the Project has established LDCs in each village, with inclusive and representative membership. All community groups are represented, including women and youth ensuring transparent decision-making, equitable access to opportunities, and collective definition of development priorities. This inclusive governance structure is a key measure to prevent conflict and to maintain social cohesion.

A second potential risk relates to GBV, which may arise or be exacerbated by changes in social and economic dynamics associated with development activities. The Project recognizes that increased economic participation of women may alter household and community power relations and could then increase the risk of GBV. To address this, the Project organizes awareness-raising activities targeting communities and local authorities and training of LDC members, to reduce discriminatory practices, preventing GBV, and enhancing the safety and inclusion of women, girls and other vulnerable groups. The Project also supports the creation and strengthening of women's groups and cooperatives, where participation is voluntary, and collaborates with local NGOs specialized in women's empowerment to strengthen capacities and integrate gender considerations throughout project implementation.

[91] For statistical purposes, the United Nations considers "a young person" to be someone between the ages of 15 and 24, https://www.un.org/fr/global-issues/youth

Finally, the Project has established a FGRM to receive and address complaints, serious grievances, and allegations, including those related to safety, inequitable benefit-sharing, or GBV (Section 2.3.15). This mechanism provides a confidential, accessible, and transparent process for resolving issues and ensuring corrective actions when necessary.

4.2.3 Net Positive Community Well-Being (VCS, 3.19; CCB, CM2.3, GL1.4)

The Project is expected to generate net positive well-being impacts for all identified community groups compared to the without-project land use scenario.

First, inclusive governance mechanisms, notably through LDCs, ensure that all community groups - including women - are effectively represented and able to articulate their needs and priorities. Through participatory decision-making, capacity building, and awareness-raising, the Project strengthens local governance, reduces risks of exclusion and conflict, and enhances social cohesion.

Second, a core component of the Project is the development of sustainable, climate-resilient, and improved agriculture practices. The Project will improve food security for local populations by sustainably intensifying production per unit area ; through the introduction of improved cuttings and seeds, combined with agroecological soil fertilization practices. Communities will generate additional income, both through PES and by developing and introducing perennial crops (such as coffee, oil palm, and cocoa) to ensure sustainable household revenues and income diversification. Considering that over the next 5 years, 2,700 farmers will benefit from PES (Table 83), it can be estimated that in this period the total number of people expected to have improved livelihoods thanks to PES for agricultural activities will be around 14,850[92].
In addition to agricultural activities, the Project will generate one-off income through PES, for example for road repair work or for participating in transect surveys with the eco-guards (Section 5.4.1). Accessibility and market access will be improved through the rehabilitation and maintenance of roads, facilitating the transport and commercialization of agricultural products (mainly palm oil and cocoa).

Third, the Project also generates positive well-being impacts through investments in public infrastructure and well-being, implemented through specific agreements signed at the Groupement level. Through the LDF, the Project finances the equipment, rehabilitation, and development of schools and health centers. These investments improve access to education and healthcare, and strengthen basic service provision, delivering clear well-being gains compared to the without-project scenario, in which such investments would remain limited or absent.
For example, it is estimated that, for the investments planned under the LDF, over the next five years, around 30% of the current population in the PZ will have benefited from the health-related investments made under the Project - whether through the purchase and distribution of medicines, the construction of new health centers, the provision of equipment for these facilities, or the work of specialized NGOs partnering with the Project. Furthermore, investments in school supplies and the construction of schools are expected to improve the quality of education for 30% of children.

By strengthening sustainable land management and promoting diversified and climate-resilient livelihoods, the Project enhances the adaptive capacity of communities to droughts, floods, erosion, and other climate-related risks. Combined with improved infrastructure and strengthened local institutions, these measures contribute to long-term resilience and reduced vulnerability to climate change.

[92] This estimate is based on the assumption that the PES received by each beneficiary actually benefit the entire household (composed of 5,5 members according to the ESIA, 2026).

Consequently, in the 5 first years, the well-being of around 17% of the population (17 400 inhabitants) is expected to improve as a result of project activities (additional income, access to healthcare, adapted infrastructures for a better delivery of resources…). In the long term, the Project is expected to generate net positive benefits in terms of well-being for all community groups and deliver significant benefits in terms of climate change adaptation, in line with the requirements of the CCB Gold standard.

4.2.4 High Conservation Values Protected (CCB, CM2.4)

The Project has been designed to avoid any negative impacts on HCVs related to community well-being and to maintain or enhance these values throughout the Project lifetime.

NRMPs (APZ, protected areas…) are implemented following participatory planning processes through LDCs, ensuring that community needs, rights, and priorities are identified and respected. NRMPs ensure the protection of HCVs by promoting sustainable management practices or protection in those areas.

The Project adopts a consultative and adaptive approach throughout its implementation, ensuring that activities can be adjusted over time based on feedback from different community groups and other stakeholders, thereby strengthening ownership and sustainability of the intervention over time.

As a result, the project maintains or enhances all HCVs related to community well-being, with no anticipated negative impacts under the with-project scenario compared to the without-project scenario.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.1)

The Project is expected to generate positive impacts on other identified stakeholders.

First, the Project supports the Government of DRC in the implementation of its national REDD+ strategy, by contributing to the reduction of emissions from deforestation and forest degradation while promoting sustainable and inclusive development at the local level.

The Project also generates positive impacts for local authorities. By establishing inclusive governance mechanisms and conflict-resolution frameworks, the Project strengthens coordination between communities, customary leaders, and administrative authorities. This contributes to improved local governance, social cohesion, and institutional capacity.

In addition, the Project supports government agencies responsible for law enforcement and environmental protection by strengthening monitoring and prevention of illegal activities within the PA. Forest ecosystem monitoring is carried out by eco-guards working in collaboration with Judicial Police Officers from the MEDD and with the Congolese Institute for Nature Conservation (ICCN). This collaboration contributes to improved enforcement of environmental regulations and protection of forest resources.

No significant adverse impacts on the well-being of other stakeholders are anticipated as a result of project activities.

4.3.2 Mitigation of Negative Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.2)

No negative impacts on other stakeholders were identified.

4.3.3 Net Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.3)

As there is no negative impact of the Project on other stakeholders, the net impact is positive.

4.4 Community Impact Monitoring

4.4.1 Community Monitoring Plan (CCB, CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

The Project implements an annual community monitoring plan to assess impacts on community well-being, differentiated effects across community groups, and the effectiveness of mitigation and enhancement measures related to HCVs. The monitoring framework is directly linked to the Project's causal model, objectives, and predicted social, economic, and climate adaptation outcomes. Results are reviewed annually and used to inform adaptive management.

Table 84 - Community monitoring plan

Project Activity	Objective	Communities and Groups monitored	Indicators tracked	Measurement & Sampling Methods
LDCs development for inclusive governance and capacity building for communities	Strengthening local governance	All communities	Number of LDCs established	LDC by laws
			Number of meetings held with LDCs	LDC records
	Reducing inequality	women, youth,	Number of women and young	LDC by laws
Development of sustainable agricultural practices	Supporting natural resource management	Farmers	Number of NRMPs designed and implemented	GIS monitoring
	Supporting subsistence farming and improving practices	Farmers	Hectares of planted woodlands with improved seedlings, number of nurseries created	GIS monitoring
		Farmers	Number of training courses on new agro farming practices	GIS monitoring
		Farmers	Hectares of agroforestry plantations	GIS monitoring
	Improving revenues through High-value agricultural value chains (coffee, cocoa, NTFPs)	Farmers	Hectares of perennial plantation planted	GIS monitoring
		Farmers	Number of households engaged in high-value agricultural value chains	PES records

PES, including for minorities	Improving revenues	Smallholders; Community members	Amount of PES contracts signed and number of PES beneficiaries	LDC records PES records
		Smallholders	Average agricultural annual income (USD/family)	Household surveys
	Improving revenues for minorities	Women	Number of women receiving PES	PES records
		Young	Number of young receiving PES	PES records
Specific agreement	Improvement of community infrastructure (health, education)	All communities	Number of health centers rehabilitated and equipped	LDF report CSMA-FPIC
		Young	Number of schools rehabilitated and equipped with school materials	LDF report CSMA-FPIC
		All communities	Kilometers of roads rehabilitated, Number of bridges built, Amount of PES allocated to improving roads	LDF report CSMA-FPIC
Conflict prevention and grievance management	Reducing conflicts	All stakeholders	Number of grievances received and resolved	Project grievance register

4.4.2 Monitoring Plan Dissemination (CCB, CM4.3)

The Project's community monitoring plan, as well as the results obtained through its implementation, will be made available on a publicly accessible online platform, such as the Verra VCS registry, and will be updated following each monitoring cycle.

At the local level, summaries of the monitoring plan and monitoring results will be communicated to communities and other stakeholders through LDCs meetings, community assemblies, and consultations with customary and administrative authorities. Information will be shared in an appropriate format and language adapted to local contexts (French and Lingala), including oral presentations where necessary, to ensure understanding by all community groups. It is also planned to put bulletin boards in all the villages to display the necessary information for the local communities.

This approach ensures transparency, facilitates stakeholder engagement, and allows community feedback to inform adaptive management of biodiversity conservation measures.

4.5 Optional Criterion: Exceptional Community Benefits

4.5.1 Exceptional Community Criteria (CCB, GL2.1)

The DRC's Human Development Index for 2023 is 0.522[93] placing the country in the category of low human development countries, ranking it 171st out of 193 countries and territories.

4.5.2 Short-term and Long-term Community Benefits (CCB, GL2.2)

[93] Data – UNDP (United Nations Development Programme)

The Project is expected to generate net positive well-being benefits for smallholders and community members in both the short and long term.

In the long term, the Project will enhance community resilience to climate change through the promotion of sustainable and climate-resilient agricultural practices (improved soil fertility, use of climate-resilient crop species).

The Project will enable communities to generate additional income by developing and introducing perennial crops (such as coffee, oil palm, and cocoa) to ensure sustainable household revenues in the long term. Furthermore, the Project will support structuring of agricultural value chains by improving market access, implementing small processing units, and increasing profitability.

Long-term benefits also include investments in education and health infrastructure, as well as local economic development through improved road accessibility, strengthened value chains, access to new markets, and the introduction of high-value crops.
Together, these outcomes improve food security, diversify livelihoods, and strengthen the adaptive capacity and long-term well-being of communities compared to the without-project scenario.

4.5.3 Community Participation Risks (CCB, GL2.3)

An ESIA was conducted to identify risks related to community participation in the Project. The main risks raised by local communities that could limit their participation include:

- Resistance to adopting new agricultural practices: many smallholder farmers are accustomed to traditional farming methods and lack technical knowledge for cultivating perennial crops such as cocoa, oil palm and coffee, or for implementing agroecological practices. *Project measures:* technical support and guidance are provided by agronomists, and PES are used to incentivize the adoption of sustainable practices.
- Risk of exclusion or unequal access to project benefits: minorities, including women and youth, could potentially be excluded, and unequal distribution of benefits could create tension between groups.
  Project measures: inclusive LDCs have been established to ensure all community groups are represented. Additionally, the CCRC monitors compliance with agreements and ensures fair participation and benefit sharing.

Through these participatory mechanisms, the Project is designed to prevent trade-offs and manage risks, ensuring equitable access to benefits and active engagement of all community groups.

4.5.4 Marginalized and/or Vulnerable Community Groups (CCB, GL2.4)

Table 85 - Project's net benefits for Women

Community Group	Women
Net positive impacts	- Access to income-generating activities (PES, agricultural support) - Improved access to health services, including maternal care and family planning

	- Strengthened role in community decision-making and social recognition
Benefit access	- Inclusive LDCs ensure women are represented (30% objective) - Targeted outreach and training provided - Collaboration with NGOs for capacity building and gender-sensitive approaches
Negative impacts	- Risk of exclusion or unequal participation mitigated through LDCs and awareness campaigns - Increased autonomy and access to income (e.g., via PES) may create jealousy or domestic tensions, potentially increasing gender-based violence. Measures to mitigate: joint household engagement, community sensitization, support for women's associations, anonymous Grievance Redress Mechanism

Table 86 - Project's net benefits for Youth

Community Group	Youth (15-24)
Net positive impacts	- Employment opportunities through project activities (agriculture, infrastructure, PES programs) - Better access to education and skills development through technical support and training - Increased income and engagement in local development initiatives
Benefit access	- Youth actively involved in LDCs and local planning - Recruitment policies prioritize local participation - Training sessions adapted to local context and needs
Negative impacts	- Potential lack of engagement mitigated through outreach and participation incentives - CCRC provides mechanism to address disputes or exclusion

4.5.5 Net Impacts on Women (CCB, GL2.5)

Please refer to Sections 4.2.1, 4.2.3 and 4.5.4.

4.5.6 Benefit Sharing Mechanisms (CCB, GL2.6)

Please refer to Section 2.5.8.

4.5.7 Benefits, Costs, and Risks Communication (VCS, 3.18; CCB, GL2.7)

Please refer to section 2.3.7 above.

4.5.8 Governance and Implementation Structures (CCB, GL2.8)

The Project's governance and implementation structures are designed to enable full and effective participation of smallholders and community members at two distinct levels:

1. At the village level:

76 LDCs, one per village[94], were established through a participatory process with elected members among the communities.

Table 87 - LDCs consist of three governing bodies

The General Assembly	- The regular General Assembly meets twice a year - A special General Assembly may be convened at the request of the Executive Committee. - Its decisions are binding on all members.
The Executive Committee	- This body is responsible for the planning and management of the LDC. - It consists of 11 members, including a president, vice president, secretary, treasurer, and advisors. - This composition ensures gender representation, with at least 30% women. - Members are elected by the General Assembly through direct universal suffrage, and their term of office is three years, renewable once.
The Audit Committee	- This is the body responsible for auditing all LDC resources. - It consists of three members elected by the General Assembly.

LDCs define community development priorities during the NRMPs elaboration and act as the primary interface between the Project and the communities. They relay the communities' requests, particularly through exchanges with sWc Kongo's social facilitators responsible for community relations.

2. At the Groupement level:

- The CSMA-FPIC represents the communities of all villages inside a Groupement. It was established to facilitate ongoing dialogue throughout project implementation and ensure compliance with the commitments of both the Project Proponent and the communities. The CSMA-FPIC is also responsible for negotiating the specific agreement for investments related to school and health infrastructure, financed by the LDF. The CSMA-FPIC meets at least twice a year and holds an annual review meeting to assess the implementation of the Agreement and make recommendations to improve project execution.
- The signing of the FPIC was also accompanied by the creation of the CCRC, developed at the Groupement level to facilitate conflict resolution within the communities.

Finally, the Project encourages the development of local associations (such as women's associations) and farmer collective structures (such as the RAMC) which are self-governance mechanisms enabling the full and effective participation of smallholders and community members in decision-making and project implementation.

[94] Only the village of Sanga 1 did not establish any LDC due to internal conflicts. As a result, Sanga 1 is currently not participating in the Project.

4.5.9 Smallholders/Community Members Capacity Development (CCB, GL2.9)

The Project actively strengthens the capacity of smallholders, local institutions (RAMC) and communities to participate effectively in project design, implementation, and management.

Capacity-building activities include technical support for sustainable, climate-resilient agriculture and agroforestry, introduction of high-value crops, and training on governance, participatory monitoring, gender equality, and non-discrimination. Local NGOs, agronomist and social facilitator, provide training to communities and institutions (RAMC), enabling them to plan, implement, and manage interventions effectively. Regular workshops, coaching, and participatory evaluations build knowledge and skills, ensuring active and informed participation throughout the Project lifecycle.

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (VCS, 3.19; CCB, B1.1)

5.1.1.1 Location

The Lisala concession is located in Mongala Province, within the Congo Basin, one of the largest remaining continuous tropical rainforest landscapes globally[95]. It lies at the interface of two ecoregions[96] - the Central Northeasternn Congolian Lowland Forests and the Western Congolian Swamp Forests - resulting in a mosaic of ecosystems including dense semi-deciduous forests, evergreen forests, swamp and seasonally flooded forests, secondary forests, savannahs, rivers, and wetlands.

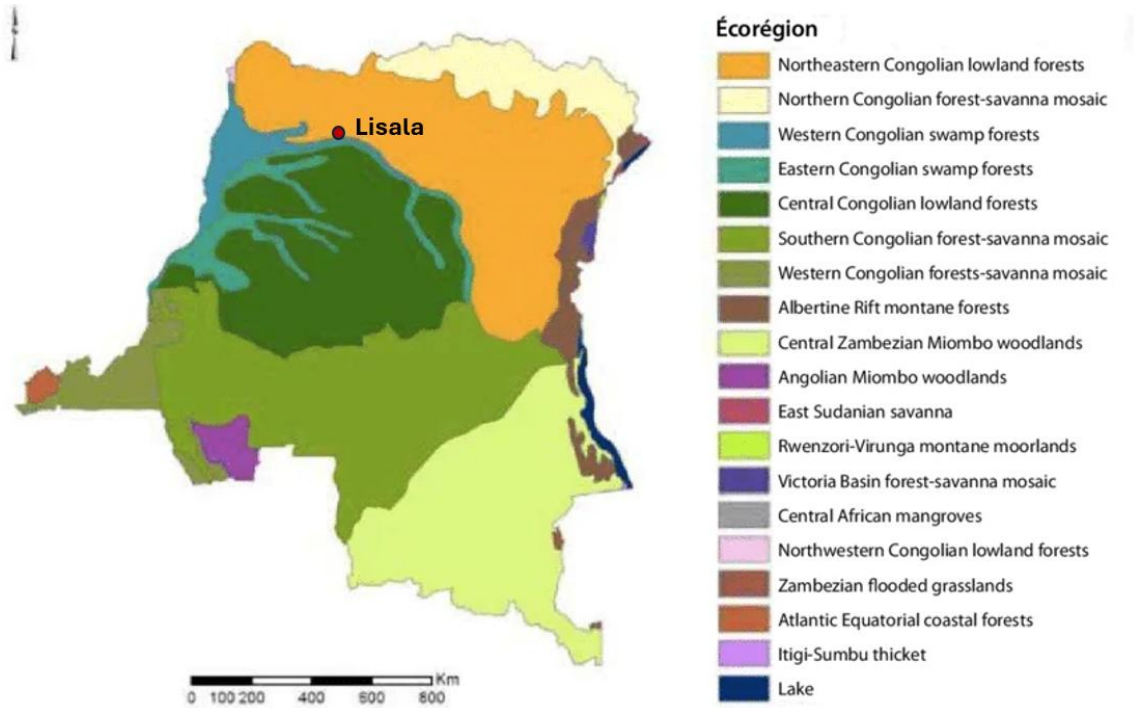


Figure 27 - Lisala at the interface of two ecoregions[97]

Forest cover within the PA consists of approximately 94,1% tropical dense forest and 5,9% tropical swamp forest, supporting high levels of species richness and ecological connectivity.

5.1.1.2 Fauna

Site-specific baseline data for the Lisala concession are primarily derived from faunal surveys conducted in 2014 and carried out as part of the preparation of the Forest Management Plan of the former forest

[95] World economic forum
[96] Central Congolian Tropical Forests (AT14), One earth
[97] Map from F. Bayengeha

concession (CCF No.036/11).[98] Two types of sightings are recorded during wildlife surveys[99]: direct sightings (animals that have been seen (alive or dead) or heard) and indirect sightings (all signs of presence left by the animals (droppings, tracks, nests, etc.)).

The inventories confirmed the presence of several IUCN[100]-listed species within the Concession, including:

- Chimpanzee (Pan troglodytes) – Endangered
- Giant Pangolin (Manis gigantea) - Endangered
- Leopard (Panthera pardus) – Vulnerable

Table 88 - Wildlife observed in the *Lisala* concession during the 2005 Forest Management Plan inventories

Order	Family	Common name	Scientific name	Protection in the RDC[101]	IUCN Classification[102]
Artiodactyla	Bovidae	Yellow-backed duiker	*Cephalophus silvicultor*	Partial	NT
		Black-backed duiker	*Cephalophus dorsalis*	Partial	NT
		Blue duiker	*Philantomba monticola*	Partial	LC
		Black-fronted duiker	*Cephalophus nigrifrons*	None	LC
		Peters' duiker	*Cephalophus callipygus*	None	LC
		Sitatunga	*Tragelaphus spekii*	Partial	LC
	Suidae	Floating pig	*Potamochoerus porcus*	Partial	LC
	Tragulidae	Water chevrotain	*Hyemoschus aquaticus*	Partial	LC
Carnivora	Felidae	Leopard	*Panthera pardus*	Partial	VU
Primates	Cercopithecidae	Guereza	*Colobus guereza*	Total	LC
		Angola colobus	*Colobus angolensis*	Total	VU
	Hominidae	Chimpanzee	*Pan troglodytes*	Total	EN
Pholidota	Manidae	Giant Pangolin	*Smutsia gigantea*	Total	EN

Table 89 - UICN Red List classification of threatened Species

LC	**Least Concerned**
NT	**Near Threatened**
VU	**Vulnerable**
EN	**Endangered**
CR	**Critically Endangered**

During the field surveys conducted in 2025, the communities interviewed confirmed the presence of chimpanzees.

[98] Société Sodefor (2015) - Rapport d'inventaire d'aménagement Concession 036/11 – Lisala
[99] Method for collecting wildlife records defined by White L. & Edwards A. (2000), *Utilisation de transect pour le recensement d'animaux*
[100] International Union for Conservation of Nature
[101] According to Ministerial Order No. 020/CAB/MIN/ECN-EF/2006 of 20 May 2006 approving the list of protected animal species in the DRC
[102] UICN classification as of 23 December 2025

5.1.1.3 Flora

Systematic forest inventories conducted in 2014 identified 262 tree species across 46 families[103], of which at least 22 species are classified as threatened or critically endangered by the IUCN.

The inventory identified the species listed below:

Table 90 - List of vulnerable and endangered flora species identified during the *2014* Forest Management Plan inventories

Tree species	Scientific name	Family	UICN
Afrormosia	*Pericopsis elata*	Fabaceae	**EN**
Sapele	*Entandrophragma cylindricum*	Meliaceae	**VU**
Sipo	*Entandrophragma utile*	Meliaceae	**VU**
Tola	*Prioria balsamifera*	Caesalpiniaceae	**EN**
Kosipo	*Entandrophragma candollei*	Meliaceae	**VU**
Kotibe papa	*Nesogordonia papaverifera*	Sterculiaceae	**VU**
Mukulungu	*Autranella congolensis*	Sapotaceae	**EN**
Andoung sp	*Monopetalanthus sp*	Caesalpiniaceae	**VU**
Koto ovale	*Pterygota bequaertii*	Sterculiaceae	**VU**
Avodire	*Turraeanthus africanus*	Meliaceae	**VU**
Cordia d'Afrique	*Cordia platythyrsa*	Boraginaceae	**VU**
Dacryodes spp	*Dacryodes spp*	Burseraceae	**VU**
Ebène noir	*Diospyros crassiflora*	Ebenaceae	**VU**
Kanda	*Beilschmiedia gilbertii*	Lauraceae	**VU**
Kanda brun	*Beilschmiedia congolana*	Lauraceae	**EN**
Onie	*Garcinia kola*	Clusiaceae	**VU**
Baphia sp	*Baphia speciosa*	Fabaceae	**EN**
Donella	*Donella guereliana*	Sapotaceae	**EN**
Nsangomo	*Allanblackia floribunda*	Clusiaceae	**VU**
Ochna	*Ochna spp*	Ochnaceae	**Vu or EN**
Rinorea spp	*Rinorea spp*	Violaceae	**CR or EN**
Syzy sp	*Syzygium spp*	Myrtaceae	**EN or VU**

Table 91 - UICN Red List classification of threatened Species

LC	**Least Concerned**
NT	**Near Threatened**
VU	**Vulnerable**
EN	**Endangered**
CR	**Critically Endangered**

5.1.1.4 Main threats to biodiversity

T

he principal threats to biodiversity within the Lisala concession are anthropogenic and include:

- Illegal logging and progressive deforestation, mainly driven by slash-and-burn subsistence agriculture, resulting in habitat loss and fragmentation.

[103] Société Sodefor (2015) - Rapport d'inventaire d'aménagement Concession 036/11 – Lisala

- Uncontrolled hunting, for subsistence and commercial purposes, using firearms and traps, leading to population decline.
- Poaching, targeting chimpanzees despite legal protection.
- Destructive fishing practices, including poisoning and the use of fine-mesh nets, which prevent fish stock renewal.

These pressures have contributed to a gradual decline in wildlife populations and ecosystem integrity within the Lisala concession. Through the field surveys conducted in 2025, communities report a decline in the availability of game (wildlife) in the forests.

5.1.2 High Conservation Values (CCB, B1.2)

This assessment focuses exclusively on HCVs related to biodiversity.

Table 92 - HCV 1 : Threatened fauna species

High conservation value	Pan troglodytes (Chimpanzee)
Qualifying attribute	IUCN Category: EN (endangered) The Chimpanzee is an endangered primate species, seriously threatened by poaching and the bushmeat trade. Killing or capturing chimpanzees for any purpose is illegal under national and international law. In the PZ, indirect observations of their presence, namely nests and feeding remains, were made during surveys in the Concession. During field investigations in 2026, villagers showed a photo of a chimpanzee, confirming their presence in the North East of the Concession. Since 2016, Chimpanzee has been listed as a threatened species on the IUCN Red List.
Focal area	Project Accounting area

Focal area	Project Accounting area
High conservation value	Panthera pardus (Leopard)
Qualifying attribute	IUCN Category: VU (vulnerable) The primary threats to Leopards are anthropogenic. Habitat fragmentation, reduced prey base and conflict with livestock and game farming have reduced Leopard populations throughout most of their range[104]. Conservation activities may enable leopard populations to expand.

[104] Hunter et al. 2013

Focal area	Project Accounting area

High conservation value	Smutsia gigantea (Giant Pangolin)
Qualifying attribute	IUCN Category: EN The main factors driving the Giant Pangolin decline include intensive poaching, fueled by international demand for its scales and meat, as well as deforestation and habitat loss caused by agricultural and mining expansion. Although national laws exist to protect the species, their enforcement remains limited due to a lack of resources and corruption.
Focal area	Project Accounting Area

Table 93 - HCV 1 : Threatened Flora Species

High conservation value	Prioria balsamifera (Tola)
Qualifying attribute	IUCN Category: EN The wood of P. balsamifera is marketed under the name tola or agba[105]. The exact quantities of wood from this species sold on the international market remain unclear, as it is believed to be exported in mixed batches[106]. However, in recent years, there has been a variation in the volumes of wood exported from this species, with a downward trend. This is thought to be linked to the intensive exploitation they have undergone and the progressive degradation of their habitat[107].
Focal area	Project Accounting area

High conservation value	Vulnerable and/or other endangered plant species
Qualifying attribute	Please refer to Table 81.
Focal area	Project Accounting area

[105] Tailfer, 1989;
[106] Lemmens, 2011
[107] Bbidjo et al., « Prioria balsamifera (Vermoesen) Breteler et Prioria oxyphylla (Harms) Breteler ».

Table 94 - HCV 2: Landscape-level ecosystems, ecosystem mosaics and intact forest landscapes

High conservation value	Diverse and preserved forest landscapes and ecosystems
Qualifying attribute	The Concession features a variety of ecosystems rich in biodiversity and well preserved. These forests provide unique habitats for flora and fauna species such as dense evergreen rainforests, swamp forests and wetlands, and dense semi-deciduous forests. These forests have retained their connectivity and therefore represent an important ecological corridor for the migration and dispersal of species. These ecosystems are home to rare endemic species and represent an important carbon sink that is vital to preserve.
Focal area	Project Accounting area

Table 95 - HCV 3 : Rare, threatened ecosystems

High conservation value	Lowland Semi-Deciduous Rainforest and swamp forest
Qualifying attribute	The Lisala region is composed of swamp forests and semi-deciduous forests. Based on the IUCN ecosystem criteria, Shapiro et al. (2021) identified several vulnerable ecosystems in this area. A significant portion of the forest in the Lisala REDD+ PA remains primary forest.
Focal area	Project Accounting area

5.1.3 Without-project Scenario: Biodiversity (CCB, B1.3)

The most likely without-project scenario (referring to SBIA document[108]) - is based on current land-use trends and pressures observed within the PZ. Those pressures are documented in the former Forest Management Plan, biodiversity inventories, socio-economic assessments conducted by the previous concession holder, and stakeholder consultations carried out under the ESIA and the NRMP, including consultations on hunting practices and forest resource use.

In the absence of the Project, despite its official status as a conservation concession area, the area would continue to deteriorate due to the following factors:

1. **Progressive deforestation and forest degradation**

Population growth and the intensification of shifting slash-and-burn agriculture are expected to drive continued forest clearance and degradation. Current trends indicate an estimated deforestation rate of approximately 1280 ha/year[109]. If these trends persist, a significant proportion of forest cover within the PA would be degraded or converted within 30 years, resulting in habitat loss, increased fragmentation, and the decline of forest-dependent species. Although identified as endangered or vulnerable by the IUCN, these species would continue to be threatened by deforestation due to illegal logging. The disappearance

[108] Social and Biodiversity Impact Assessment Manual for REDD+ Projects
[109] Please refer to the GHG_Baseline Document (Appendix)

of large mammals, such as panthers or chimpanzees, further disrupts forest regeneration processes for species dependent on animal seed dispersal[110].

2. Increasing hunting and fishing pressure

Due to population growth and food insecurity, increased pressure from hunting and fishing is to be expected. Unsustainable and non-selective practices (firearms, poisoning, fine-mesh nets) are causing rapid declines in wildlife populations and limiting their natural recovery.

3. Poaching of threatened species

Intensive poaching of pangolins or chimpanzees for scale and meat is likely to continue given the lack of surveillance.

4. Climate change as an aggravating factor

Over the long term, climate change is expected to exacerbate forest vulnerability and alter ecosystem dynamics[111]. Without the implementation of the Project, combined pressures - population growth, food insecurity, and the absence of sustainable management - would inevitably lead to accelerated forest degradation, a loss of biodiversity, and the decline of vital ecosystem functions across the PA.

In accordance with SBIA recommendations, the reference scenario, including consideration of factors of change and consequences, is represented in the diagram below:

[110] Beaune et al., « La disparition des arbres éléphants-dépendants d'une forêt tropicale du Congo »; Blake et al., « Forest Elephant Crisis in the Congo Basin ».
[111] De Wasseige et al., *The Forests of the Congo Basin - Forests and Climate Change*.

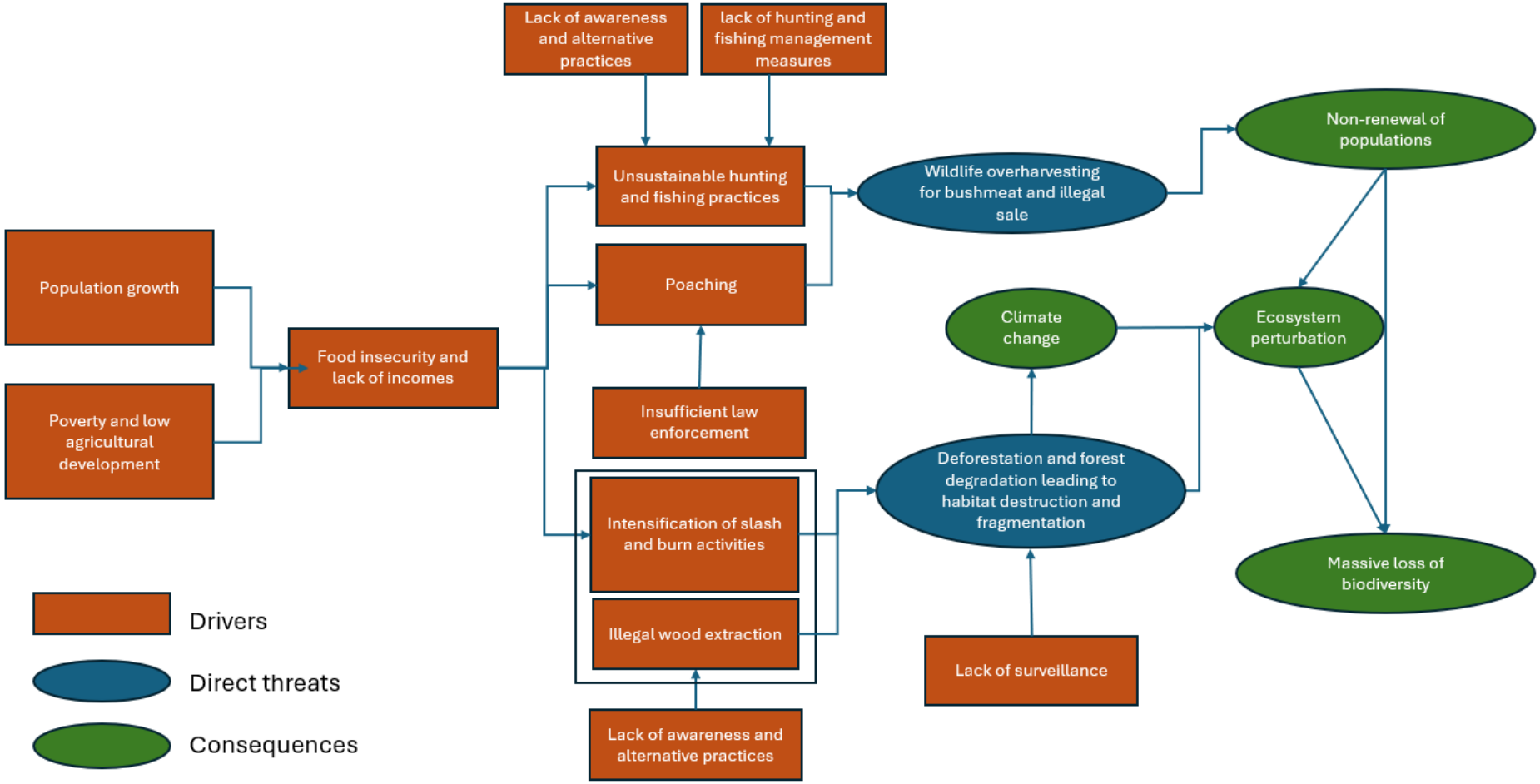


Figure 28 - Identification of the main factors and consequences of the baseline scenario

Source: sWc Kongo

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (VCS, 3.19; CCB, B2.1)

The PA was not cleared or drained of existing natural ecosystems nor the dominant land use was invasive, at least the 10 years prior to the project start date (i.e. before 2014). Please refer to Section 3.1.2.

In December 2024, prior to the start of the Project, the Concession has been reclassified as a conservation concession, and all commercial logging activities have ceased. The Project therefore does not involve the conversion of natural ecosystems and is fully compliant with CCB requirements regarding land-use history.
No drainage of wetlands or conversion of forested areas is planned or implemented under the Project. On the contrary, the Project is designed to maintain existing land cover and ecosystem functions and to address the drivers of degradation identified in the without-project scenario through improved governance, community engagement, and sustainable land and resource management.
Compared to the without-project scenario described in Section 5.1.3, the Project is expected to alter the trajectory of biodiversity change within the PZ by reducing pressures on natural ecosystems and improving conditions for the conservation of fauna and flora over the project lifetime. Expected changes in biodiversity are described below:

Table 96 - Expected changes in biodiversity

Biodiversity element	Forest cover and structure
Estimated change	Reduction of unplanned deforestation and maintenance of forest cover in conservation forests.
Justification of change	The activities implemented will effectively reduce deforestation and forest degradation and maintain these ecosystems and their functionality. The Project plans to reduce deforestation through the implementation of alternative agricultural activities, the generation of new yields, resource use planning, and the establishment of a monitoring system.

Biodiversity element	Habitat connectivity
Estimated change	Maintenance of existing habitat connectivity
Justification of change	By preventing further forest fragmentation and maintaining continuous forest cover, the Project is expected to preserve ecological corridors within the Concession and between surrounding protected and Ramsar areas.

Biodiversity element	Wealth and abundance of species of cultural importance for community livelihoods (fishing, hunting, NTFPs)
Estimated change	Increase in wildlife and plant populations consumed by communities
Justification of change	By implementing sustainable management measures and practices for fishing and hunting activities among communities, pressures will be reduced on fish and game resources.

Biodiversity element	Wealth and abundance of species classified as "critically endangered", "endangered" or vulnerable"
Estimated change	Increase in populations of HCV species (fauna and flora).
Justification of change	The decrease of logging activities and the establishment of conservation areas monitored by eco-guards should ensure the protection of endangered tree species, and encourage the return of rare fauna species populations to the Concession.

5.2.2 Mitigation Measures (VCS, 3.19; CCB, B2.3)

The Project is designed to conserve forest ecosystems and reduce deforestation and forest degradation. Project activities are non-extractive and do not involve forest clearing, habitat conversion, or ecosystem drainage. The Project uses only native species where relevant. Invasive species and genetically modified organisms (GMOs) are not used.

Therefore, no significant negative impacts on biodiversity are anticipated.

5.2.3 Net Positive Biodiversity Impacts (CCB, B2.2, GL1.4)

As demonstrated throughout this section, the Project's activities directly address the main drivers of biodiversity loss identified in the PZ, namely:

- overexploitation of forest, wildlife and aquatic resources;
- deforestation and forest degradation driven by shifting agriculture and unsustainable land use; and
- illegal hunting and logging activities.

Under the without-project scenario described above, these pressures are expected to continue or intensify, leading to further habitat loss, fragmentation of forest ecosystems, and continued decline of wildlife populations, including threatened species.
In contrast, under the with-project scenario, the Project is expected to deliver net positive biodiversity outcomes through the long-term conservation and sustainable management of forest ecosystems across the PA. By reducing unplanned deforestation and forest degradation and maintaining extensive forest cover, the Project will preserve habitats essential for flora and fauna and will ensure the protection of HCVs (HCV1, HCV2, HCV3) identified within the PZ.

The Project supports local communities in adopting sustainable livelihood alternatives and improved land-use practices, guided by community-based NRMPs**.** These participatory plans define land-use zoning and agreed rules for sustainable land use, thereby reducing reliance on hunting, fishing, fuelwood collection, and forest conversion, which in turn mitigates pressure on biodiversity.

The PZ plays a strategic role in conserving wetlands, forests and ecologically significant habitats at the landscape level. By maintaining continuous forest cover and limiting further fragmentation, the Project contributes to preserving ecological connectivity and facilitating species movement across the wider landscape.

In addition, by conserving large, intact and diverse forest ecosystems, the Project is expected to enhance the adaptive capacity of biodiversity to climate change impacts. Maintaining forest cover and wetland ecosystems supports microclimatic regulation, water regulation and ecological resilience to climate-related stressors such as flooding and droughts. These climate adaptation benefits are considered co-benefits of the Project's biodiversity conservation strategy.

Through these combined measures - addressing direct drivers, protecting HCVs, supporting communities, and applying precautionary and adaptive management - the Project is expected to generate net positive, long-term impacts on biodiversity within the PZ, in full alignment with CCB Criterion B2.2 and, where applicable, Gold Level requirements for climate change adaptation.

5.2.4 High Conservation Values Protected (CCB, B2.4)

None of the biodiversity-related HCVs (HCV 1, HCV 2, and HCV 3) identified in Section 5.1.2 will be negatively affected by the Project. All Project activities are designed to avoid forest clearing, habitat conversion, or degradation in areas supporting these HCVs.

Under the without-project scenario, ongoing deforestation, increasing hunting pressure, and forest degradation would progressively threaten these HCVs, leading to habitat loss, landscape fragmentation, and the decline of threatened and endangered species.

By conserving forest cover, preventing illegal logging and hunting, and supporting community-based sustainable resource management, the Project maintains the integrity of HCV 1–3 habitats and strengthens ecological connectivity across the landscape.

5.2.5 Species Used (VCS, 3.19; CCB, B2.5, B2.6)

The Project plans to implement agroforestry and agricultural activities that are consistent with local customs and consumption patterns.

For agricultural activities, the Project will support smallholder farmers in developing staple food crops, particularly cassava (Manihot esculenta Crantz), which represents one of the main food sources in the DRC. The Project will promote the use of locally recommended cassava varieties such as Obama, Zizila, and Ilona. These varieties have been selected and validated by national and international research institutions, including the International Institute of Tropical Agriculture (IITA) and the FAO, ensuring their suitability and safety for local ecosystems.

For agroforestry systems, the Project plans to introduce mixed plantations combining coffee (Coffea canephora, Coffea arabica), cocoa[112] (Theobroma cacao), palm oil (Elaeis guineensis), rubber tree (Hevea brasiliensis) and acacia species (Acacia sp.)[113]. All those species are well adapted to the climatic conditions of the PZ. Moreover, these species have been cultivated in the DRC for several decades without evidence of negative ecological impacts.

Additional agricultural species may be integrated into Project activities according to community needs and preferences. In all cases, the Project will prioritize native and non-invasive species, ensuring that no known invasive species are introduced.

[112] Jagoret et al., « Cacaoculture agroforestière en Afrique ».2010
[113] Bernhard-Reversat et al., « Biomasse, minéralomasse et productivité en plantation d'Acacia mangium et auriculiformis au Congo ». 1994

Table 97 - Species introduced during the Project

Species introduced	Classification	Justification for use	Adverse effects and mitigation
Cassava (Manihot esculenta Crantz), cv. Obama, Zizila, Ilona	Non-native to Africa (originating from South America) but long-established and widely cultivated in the DRC; not considered invasive in this agricultural context. The DRC ranks second among the major producers of cassava in Africa and fifth worldwide.	Cassava is a staple food crop and one of the main food sources in the DRC. The Project supports food security and local livelihoods by promoting cassava cultivation in line with local customs and consumption patterns.	Mitigation measures include promoting agreo-ecological practices, crop rotation, use of improved and locally adapted varieties. The Project promotes locally recommended cultivars (Obama, Zizila and Ilona), which are improved varieties of the same species selected and validated by national and international research institutions
Coffee (Coffea canephora)	Native to parts of Central and West Africa, including regions close to the DRC; non-invasive.	Coffee is included in agroforestry systems to diversify income sources and enhance the economic sustainability of smallholder farming systems. It is well adapted to local climatic conditions.	Coffee will be integrated into mixed agroforestry systems rather than monocultures and maintaining existing vegetation structure.
Coffee (Coffea arabica)	Non-native to Central Africa (originating from Ethiopia) but widely cultivated; not considered invasive in the DRC.	Coffea arabica is cultivated for its economic value and suitability in specific agro-ecological zones. It contributes to diversified agroforestry systems.	Coffee will be integrated into mixed agroforestry systems rather than monocultures and maintaining existing vegetation structure.
Cocoa (Theobroma cacao)	Non-native (originating from tropical America) but long cultivated in Africa; non-invasive.	Cocoa is introduced as part of diversified agroforestry systems to improve farmer incomes and land productivity while maintaining tree cover.	Cocoa will be integrated into mixed agroforestry systems rather than monocultures and maintaining existing vegetation structure.
Acacia mangium (Am), Acacia auriculiformis (Aa)	Non-native species from Australia, introduced in the 80s. Common in DRC.	Development of acacia based Agroforestry will support production of sustainable charcoal for households of the area Moreover, several studies[114] affirm the potential of Acacia trees as 'nurse trees' facilitating forest regeneration on degraded soils (nitrogen-fixing species).	Am is on the UICN global invasive species Database[115] but not considered by DRC as invasive.

[114] Schmerbeck et al., 2024 ; Koutika & Richardson, 2019
[115] UICN Global Invasive Species Database (2026)

		The rotation period for Aa trees is eight years, which is relatively short and allows for a regular supply of wood. Am trees have a longer rotation period of 20 years, which allows for a substantial standing carbon stock and the production of timber.	Aa is listed on DRC Global Register of Introduced and Invasive Species [116] dataset. Mitigation measures include locally adapted *Acacia* species and implementing regular monitoring and management of natural regeneration to prevent uncontrolled spread.
Oil palm (Elaeis guineensis)	Native to West and Central Africa; non-invasive when managed.	Important cash crop and traditional agricultural species in the region.	Environmental risks mainly related to monoculture expansion and deforestation. Mitigation: promotion of smallholder-scale planting, integration into diversified systems. Planting will not be carried out at the expense of the forest, but in non-forested areas.
Rubber tree (Hevea brasiliensis)	Non-native (origin: South America); non-invasive in DRC.	Income diversification and long-term economic stability for farmers through the implementation and monitoring of the development of agroforestry plots with perennial crops.	Mitigation: integration into mixed agroforestry systems and restriction to existing agricultural land.
Maize (Zea mays)	Non-native but globally cultivated; non-invasive. It is the main cereal crop in DRC and a staple food for most households, (~75% of the country's cereal production[117]).	Staple food crop contributing to food security and dietary diversity.	Risks linked to monoculture practices. Mitigation: use of improved and locally adapted varieties, crop rotation
Niébé (Vigna unguiculata)	Native to Africa; non-invasive	Key protein source; improves soil fertility through nitrogen fixation.	No known adverse ecological impacts.
Fruit trees (various species)	Species-dependent; priority given to native or long-established non-invasive species.	Improve food security, nutrition, and income diversification; contribute to agroforestry structure.	Potential risks depend on species selection. Mitigation: selection of native or non-invasive species only; exclusion of known invasive fruit tree species.

[116] Benth. in Groom Q, Wong L J, Pagad S (2020). Global Register of Introduced and Invasive Species - Democratic Republic of Congo. Version 1.4. Invasive Species Specialist Group ISSG
[117] Ndeko et al., Farmers' preferred traits, production constraints, and adoption factors of improved maize varieties under South-Kivu rainfed agro-ecologies, eastern D.R. Congo: implications for maize breeding, 2025

Bananas / Plantains	Non-native (origin: Southeast Asia) but long-established; non-invasive.	Staple food and cash crop widely consumed locally.	Mitigation: managed cultivation within agricultural plots.
Peanut	Non-native, not considered invasive in DRC.	Peanuts are cultivated for direct consumption as roasted or boiled snacks, and for other uses such as seasoning paste or as an accompaniment to foods like boiled cassava, fritters, or chikwangue, providing nutrition and supporting local diets.	Peanuts can be contaminated by aflatoxins or affected by pests and diseases, but these risks can be mitigated through proper drying, storage, resistant varieties, and good agricultural practices.

All species promoted by the Project are either native, long-established, or scientifically validated non-invasive species in the DRC. The Project ensures that HCVs are not negatively affected, through careful species selection, agroforestry-based systems, and continuous monitoring.

5.2.6 Invasive Species (VCS, 3.19; CCB, B2.5)

The Project explicitly avoids the introduction of known invasive species. Except for acacia, all species listed for the Project are classified as non-invasive species in DRC according to available national and international references, including GRIIS (Groom et al.[118]). All agricultural crops are either native or long-established cultivated species that do not spread autonomously into natural ecosystems.

Acacia sp. deemed invasive species as elaborated above, without indication on the threat status, are planted only within designated woodlots under strict scrutiny, supporting sustainable charcoal production for local households. To prevent spread outside these plantations, the Project implements strict containment measures, including regular monitoring and training of staff and communities.

5.2.7 GMO Exclusion (CCB, B2.7)

No GMOs will be used to generate GHG reductions or removals.

5.2.8 Inputs Justification (VCS, 3.19; CCB, B2.8)

The Project supports producers in adopting sustainable agricultural practices, including agroforestry systems, which are designed to function without the routine use of chemical fertilizers or plant protection products. Natural and environmentally friendly solutions, such as organic fertilizers and biological pest control, are prioritized. The use of chemical fertilizers or pesticides is not planned and should not occur. However, in exceptional cases where the food security of local populations is threatened, their use may be considered. In such cases, all applications will strictly follow the World Bank Environmental and Social Standards, excluding WHO Class Ia and Ib pesticides, with proper storage, handling, application, and monitoring measures to prevent adverse impacts on the environment, biodiversity, and human health.

5.2.9 Waste Products (VCS, 3.19; CCB, B2.9)

[118] Benth. in Groom Q, Wong L J, Pagad S (2020). Global Register of Introduced and Invasive Species - Democratic Republic of Congo. Version 1.4. Invasive Species Specialist Group ISSG

The waste management procedure was implemented following the environmental impact evaluation[119]. The ESIA identified all the waste that could result from the Project's activities, namely plastic and metal waste, oil and fuel waste, biodegradable waste and domestic water, used batteries, etc. A waste management procedure was put in place by the Project's ESG expert for each type of waste. The procedure covers the collection, storage, and management/disposal of waste to authorized recycling centers. All employees will be trained on the procedure to ensure its effective implementation.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (CCB, B3.1) and Mitigation Measures (CCB, B3.2)

No negative impacts on biodiversity outside the PZ are anticipated as a result of project activities. The risk of displacement of deforestation or hunting activities outside the PA (leakage) is addressed through community-based land-use planning and engagement, ensuring that Project benefits do not result in negative offsite biodiversity impacts (Section 2.6.1).

5.3.2 Net Offsite Biodiversity Benefits (VCS, 3.19; CCB, B3.3)

The mitigation measures implemented under the Project - including support for sustainable hunting and fishing practices, awareness-raising campaigns, and strengthened community-based natural resource management - are designed to prevent the leakage of unsustainable practices to neighboring areas. In addition, the development of alternative livelihood activities, such as agroforestry systems, sustainable agriculture, and NTFP value chains, is expected to significantly reduce pressure on surrounding forest ecosystems.

Within the PZ, the Project will generate substantial and long-term biodiversity benefits, notably through the reduction of unplanned deforestation and forest degradation. These activities will contribute to habitat preservation, improved ecological connectivity, enhanced ecosystem functionality, and the protection of rare and threatened species.

Therefore, the net effect of the Project on biodiversity is clearly positive.

5.4 Biodiversity Impact Monitoring

5.4.1 Biodiversity Monitoring Plan (CCB, B4.1, B4.2, GL1.4, GL3.4)

The biodiversity monitoring plan aims to assess the impacts of Project activities on biodiversity throughout the Project lifetime, in accordance with CCB Criteria B4.1 and B4.2. In accordance with SBIA recommendations, the selected indicators are directly linked to the Project’s biodiversity objectives and to the outputs, outcomes and impacts identified in the Project’s causal model.

Table 98 - Poject’s biodiversity monitoring plan

[119] ESIA conducted in 2026

Biodiversity objective	Indicator	Type	Area monitored	Measurement method	Frequency	Responsible Entity	Link to HCV
1) Implementation of biodiversity protection and management measures (Outputs)							
Ensure effective implementation of biodiversity protection measures	**Number of NRMPs developed and implemented**	Output	PA	Review of approved NRMP documents	Once per NRMP (10-year plans), annual status update	NGO AMAR, sWc Kongo	HCV 2
Prevent accidental degradation of habitats	**Number of eco-guards trained on environmental best practices** **Number of community members trained on environmental best practices**	Output	PA	Training attendance records	Annual	sWc Kongo	HCV 1
2) Reduction of pressures on biodiversity and forest ecosystems (Outcomes)							
Reduce anthropogenic pressure on forests	**Area (ha) of forest under effective community management**	Outcome	PA and HCV areas	GIS analysis and NRMP implementation review	Every two years	sWc Kongo (GIS expert, agronomists, and eco-guards)	HCV 2, HCV 4
Reduce anthropogenic pressure on forests	**Number of awareness campaigns on sustainable fishing and hunting practices**	Outcome	PA and HCV areas	Contract with local NGOs and mission report	Annual	sWc Kongo	HCV 5
Reduce illegal logging and forest degradation	**Number of reported illegal logging incidents**	Outcome	PA and HCV areas	Community patrol records and incident reports	Annual	sWc Kongo (eco-guards)	HCV 5
Reduce hunting pressure on wildlife	**Number of reported illegal hunting incidents**	Outcome	PA and HCV areas	Community monitoring and law enforcement reports	Annual	sWc Kongo (eco-guards)	HCV 5
Limit human disturbance in high conservation areas	**Compliance with land-use zoning defined in NRMPs (APZ)**	Outcome	PA and HCV areas	Field checks and community reports	Annual	sWc Kongo (GIS expert and eco-guards)	HCV 5
3) Biodiversity condition and HCV maintenance (Impacts)							
Maintain forest ecosystem integrity	**Forest cover and fragmentation trends**	Impact	PA	Satellite images analysis	Every two years	sWc Kongo (GIS expert)	HCV 2, HCV 4
Maintain habitat	**Presence/absence of selected**	Impact	HCV areas	Field observations,	Continuous	sWc Kongo	HCV 1

suitability for native species	**indicator animal species** (chimpanzee, giant pangolin, leopard, guereza colobus, angola colobus)[120]			community reports, inventory protocol during eco-guard patrols, camera captors		(Biodiversity expert and Eco guards)	
Increase in the population of critically endangered and endangered species	**Number of population density estimates per chimpanzees and leopard**	Impact	HCV areas	Transects to monitor the density of chimpanzees and leopard	Every 2 years	sWc Kongo (Biodiversity expert and Eco guards)	HCV 1
Conservation of endangered species	**Presence of endangered and vulnerable trees species** (UICN red list)	Impact	HCV areas	Monitoring of all endangered species by eco-guards	Continuous	sWc Kongo (Biodiversity expert and Eco guards)	HCV 1
(Re)appearance of tree species and animal species[121]	**Number of species and varieties observed,** not recorded in recent inventories	**Impact**	HCV areas	Transects + database updated by eco-guards + field observations, community reports	Continuous	sWc Kongo (Biodiversity expert and Eco guards)	HCV 1

The Project's biodiversity monitoring plan is designed to track outputs, outcomes and impacts directly linked to the Project's biodiversity objectives and to assess the effectiveness of measures implemented to maintain or enhance identified HCVs.

Monitoring activities focus on the reduction of the main drivers of biodiversity loss within the PZ, notably forest clearing, bush and forest fires, illegal hunting, and illegal logging. GIS expert, along with ecoguards and LDCs reports will monitor the communities' compliance with their commitments regarding the demarcation of APZ planned in the NRMPs.

The ESG expert is responsible for designing the monitoring protocols, training field staff and community members, supervising data collection and analysis. Ten eco-guards are permanently based in four living quarters within the conservation concession and monitor human activities that may negatively affect biodiversity and HCV attributes. Under the supervision of the Project's GIS and ESG experts, eco guards will be in charge of the following up of critically endangered and endangered species populations, both flora and fauna. During the eco-guards' activities, they will continuously check for endangered and vulnerable species (IUCN Red List), as well as animals "under total protection (DRC government) and geolocate trees at risk. Eco guards will pay particular attention to the presence of animal and plant species that had not been identified during the 2014 inventories. Indeed, due to forest conservation on the Concession and habitat connectivity, certain species may

[120] Animal species that are either "vulnerable" according to the IUCN Red List or "under total protection" according to the DRC government (Ministerial Order No. 020/CAB/MIN/ECN-EF/2006 of 20 May 2006) or under stricter protection

[121] Vulnerable, endangered and critically endangered species that have not been recorded within the Concession during the 2014 inventories

be naturally reintroduced. Moreover, eco-guards will also conduct line transect surveys every two years to estimate chimpanzees and pangolin populations in the Concession. They will be accompanied by local villagers - including hunters - who will be temporarily recruited and compensated for their extensive knowledge of the area and its flora.

In parallel, a monitoring system will be established to record wildlife observations throughout the project lifetime. Community members are encouraged to report to Eco guards sightings of notable species such as chimpanzees or panthers, as well as signs of illegal activities (poaching). Eco guards will also be in charge of reporting incidents. This participatory approach enables the regular collection of data on both fauna and pressures on ecosystems.

Monitoring results are reviewed periodically by the project management team in collaboration with LDC representatives. If monitoring identifies declining trends in biodiversity indicators, degradation of HCV attributes, or insufficient effectiveness of mitigation measures, corrective actions are defined and implemented. This adaptive management framework supports continuous improvement of biodiversity outcomes.
In addition, the Project intends to establish partnerships with local and international universities specializing in biodiversity research. These collaborations are expected to strengthen flora and fauna monitoring and allow the biodiversity monitoring plan to evolve over time as scientific knowledge and technical capacity increase.

5.4.2 Biodiversity Monitoring Plan Dissemination (CCB, B4.3)

The Project's biodiversity monitoring plan, as well as the results obtained through its implementation, will be made publicly available on the Verra VCS registry and will be updated following each monitoring cycle.

At the local level, summaries of the monitoring plan and monitoring results will be communicated to communities and other stakeholders through LDCs meetings, community assemblies, and consultations with customary and administrative authorities. Information will be shared in an appropriate format and language adapted to local contexts, including oral presentations where necessary, to ensure understanding by all community groups. It is also planned to put bulletin boards in all the villages to display the necessary information for the local communities.

This approach ensures transparency, facilitates stakeholder engagement, and allows community feedback to inform adaptive management of biodiversity conservation measures.

5.5 Optional Criterion: Exceptional Biodiversity Benefits

The project intends to meet the Gold Level for exceptional Biodiversity Benefits

5.5.1 High Biodiversity Conservation Priority Status (CCB, GL3.1)

Biodiversity inventories conducted across the entire Lisala concession in 2014 confirm the presence of multiple species of high conservation importance, demonstrating the globally and nationally significant biodiversity value of the PA. In 2026, data collection conducted within communities as part of the NRMP confirmed the presence of these species.
Field surveys recorded both direct observations (visual sightings and vocalizations) and indirect evidence (nests, dung, tracks, feeding remains, and trails) of species listed on the IUCN Red List.

These surveys confirmed the presence of endangered species – chimpanzees, giant pangolin - and through verified signs of occurrence within the PZ. The presence of at least one individual of each of those endangered species therefore meets the eligibility threshold defined under the CCB Standards. In addition, kilometric abundance indices collected during fauna surveys indicate the presence of more than 30 individuals of several Vulnerable species, including *Cercopithecus hamlyni*, *Colobus angolensis*, and leopard within the Concession. These results exceed the minimum thresholds required for Vulnerable species under the CCB criteria.

Table 99 - Kilometric abundance indices for key wildlife species recorded in the PA

Species	UICN	Direct observations				Indirect observations			Nb. of total observed	Estimation Total/100 km
		Observed	Heard	Nets, dens	feces	Trails	Damage	Others		
Chimpanzee : *Pan troglodytes*	EN	0,3	0	0,3	00	0,59	00	0,30	**1,48**	***439***
Giant Pangolin : *Manis gigantea*	EN	9,47	0	40,86	0	4,15	1,18	15,40	**71,06**	***240***
Monkeys : *Colobus guereza*	*VU*	*0,59*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,59*	*2*
Lophocebus spp	*VU*	*3,26*	*1,18*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*5,33*	*18*
Leopards : *Panthera pardus*	VU	0,0	0,0	0,0	0,0	1,78	0,0	0,0	**1,78**	***6***

The Project's conservation objectives and protection measures are expected to support the persistence, and potential recolonization of endangered species within the PA over time [122].

Together, these findings demonstrate that the PA meets the CCB biodiversity significance thresholds with the presence of Critically Endangered fauna.

5.5.2 Trigger Species Population Trends (CCB, GL3.2, GL3.3)

Table 100 - Trigger species population trends

Trigger species	Chimpanzee (pan troglodytes)
Population trend at start of project	The DRC is home to the largest population of Eastern chimpanzees, with an estimated 35,000 to 65,000 individuals[123]. The vast and dense forests of the DRC provide a crucial habitat for these chimpanzees. However, the country faces significant challenges, including deforestation, mining, and poaching. Conservation efforts are complicated by political instability and limited resources.

[123] Worldostats - Chimpanzee Population by Country – Wildlife Distribution (2025)

Without-project scenario	Without the Project, continued deforestation, forest degradation, and poaching are expected to further reduce habitat availability and increase pressure on ape populations. As observed elsewhere in the DRC, chimpanzees numbers would likely continue to decline, including within and around protected areas.
With-project scenario	With the Project, forest habitats are preserved, ecological connectivity is maintained, and poaching pressure is reduced through enhanced protection and patrols. These measures are expected to stabilize the local chimpanzee population and improve conditions for its long-term persistence within the PZ, while reinforcing community support for chimpanzees conservation.

Trigger species	Pangolin (Smutsia gigantea)
Population trend at start of project	Pangolins are the most trafficked wild mammals in the world[124]. Their scales and meat are in high demand especially in Asian countries. Tens of tons of pangolin scales, representing hundreds of thousands of individuals, are illegally traded every year, often along with other wildlife products, to supply that demand. As the numbers of Asian pangolin populations began to decline, poachers turned their attention to African species which have been traditionally hunted for local bushmeat consumption or for cultural and medicinal practices. [125] Because of this overexploitation and habitat loss, all four species of African pangolins have been listed as either Vulnerable or Endangered on the International IUCN Red List[126]
Without-project scenario	Without the Project, the giant pangolin population in the DRC is at high risk of further decline, especially in the absence of strengthened protective measures. Experts warn that if poaching and deforestation continue at the current rate, numbers could plummet critically by 2030[127], jeopardizing the species' survival in parts of the Congo Basin. With local population growth driving demand for bushmeat and the rising Asian market - particularly in China - fueling illegal trade, the increasing commercial ties between the DRC and Asian countries are likely to exacerbate this downward trend.

[124] Challender, D. W., Waterman, C. & Baillie, M. J. E. Scaling up pangolin conservation: IUCN SSC pangolin specialist group conservation action plan, in *IUCN Library System*
[125] Bernáthová, I., Swiacká, M., bath Shéba Vitel, L.C. *et al.* Population structure and demographic history of two highly-trafficked species of pangolin in the Congo Basin
[126] IUCN. *IUCN Red List of Threatened Species, Version 2023-1. IUCN*
[127] Bernáthová, I., Swiacká, M., bath Shéba Vitel, L.C. *et al.* Population structure and demographic history of two highly-trafficked species of pangolin in the Congo Basin

With-project scenario	The Project will help limit deforestation, thereby reducing the destruction of pangolin habitats. Additionally, by implementing hunting regulations, the project will strengthen the protection of endangered species, including the pangolin. Eco-guards, deployed as part of the project, will play a key role in enforcing these rules and curbing poaching, thereby helping to reduce illegal trafficking. This integrated approach aims to preserve both the ecosystem and the species that depend on

REFERENCES

A. Methodologies and Standards

- IPCC (2006). Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use (AFOLU). Intergovernmental Panel on Climate Change, Geneva.
- Intergovernmental Panel on Climate Change (IPCC). (2014). 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands. IPCC, Geneva.
- IPCC (2013). *Wetlands Supplement*
- GOFC-GOLD (2016). *REDD+ Sourcebook*
- SBIA (2011), Social and Biodiversity Impact Assessment Manual for REDD+ Projects
- Verra (2012). *VT0001 Additionality Tool*
- Verra. (2012). VT0001 v3.0: Tool for the demonstration and assessment of additionality in VCS AFOLU project activities.
- Verra (2020). *BL-UP v3.3*
- Verra (2020). VMD0010 Estimation of emissions from activity shifting for avoiding unplanned deforestation and avoiding unplanned wetland degradation (LK-ASU), v1.2, Verra.
- Verra (2020). VMD0017 Estimation of uncertainty for REDD project activities (X-UNC), v2.2
- Verra (2023). VMD0001 Estimation of carbon stocks in the above- and belowground biomass in live tree and non-tree pools (CP-AB), v1.2
- Verra (2023). VMD0002 Estimation of carbon stocks in the dead-wood pool (CP-D), v1.1
- Verra (2023). VMD007 – Module BL-UP: Baseline for Unplanned Deforestation, v3.3. Verified Carbon Standard (VCS), Verra.
- Verra (2023). VMD0015 – Module M-REDD: Monitoring of Emissions from Unplanned Deforestation, v2.3. Verified Carbon Standard (VCS), Verra.
- Verra. (2023). VMD0016 v1.3: Methods for Stratification of the Project Area (X-STR). Verified Carbon Standard.
- Verra. (2024). VM0007 REDD+ Methodology Framework v1.6. Verified Carbon Standard.
- Verra (2024). *VCS Standard v4.7*
- Verra. (2024). VM0007 REDD+ methodology framework (Version 1.8, 4 June 2024, Sectoral Scope 14).
- Verra. (2020). BL-UP v3.3: Baseline Module for Unplanned Deforestation. Verified Carbon Standard.
- WorldClim (2023). WorldClim 2.1 – High-Resolution Gridded Climate Data. University of California, Berkeley.
- White L. & Edwards A., 2000, Utilisation de transect pour le recensement d'animaux

B. Scientific Literature

Adrián Bojórquez, Angelina Martínez-Yrízar, Juan C. Álvarez-Yépiz, A landscape assessment of frost damage in the northmost Neotropical dry forest, Agricultural and Forest Meteorology, Volumes 308–309, 2021, 108562, ISSN 0168-1923,

Artés et al. (2019) A global wildfire dataset for the analysis of fire regimes and fire behaviour. Sci Data 6, 296 https://doi.org/10.1038/s41597-019-0312-2

Ayugi et al. Review of Meteorological Drought in Africa: Historical Trends, Impacts, Mitigation Measures, and Prospects. Pure Appl Geophys. 2022;179(4):1365 1386. doi: 10.1007/s00024-022-02988-z. Epub 2022 Mar 14. PMID: 35308437; PMCID: PMC8918426.

Bbidjo, Vivien, Claude Mande, Faustin Mbayu, Roger Katusi, et Janvier Lisingo. « Prioria balsamifera (Vermoesen) Breteler et Prioria oxyphylla (Harms) Breteler : traits d'histoire de vie et perspectives pour des

recherches futures ». BOIS & FORETS DES TROPIQUES 359 (février 2024): 85-95. https://doi.org/10.19182/bft2024.359.a37087.

Beaune, David, Barbara Fruth, Loïc Bollache, Gottfried Hohmann, et François Bretagnolle. « La Disparition Des Arbres Éléphants-Dépendants d'une Forêt Tropicale Du Congo ». 2012; 4. Journées Francophones Des Sciences de La Conservation. Le Réveil Du Dodo , Dijon, FRA, 2012-05-02-2012-05-04, 31, 2012.

Bennett, A.C., Banin, L., Lewis, S.L. et al. (2021). Resistance of African tropical forests to an extreme climate anomaly. Proceedings of the National Academy of Sciences (PNAS), 118(26).

Benth. in Groom Q, Wong L J, Pagad S (2020). Global Register of Introduced and Invasive Species - Democratic Republic of Congo. Version 1.4. Invasive Species Specialist Group ISSG

Bernhard-Reversat, France, D. Diangana, et M. Tsatsa. « Biomasse, minéralomasse et productivité en plantation d'Acacia mangium et A. auriculiformis au Congo ». BOIS & FORETS DES TROPIQUES 238 (décembre 1993): 35-44.

Bloemendaal, N., Haigh, I.D., de Moel, H. et al. Generation of a global synthetic tropical cyclone hazard dataset using STORM. Sci Data 7, 40 (2020)

Carly Waterman. Biodiversity of World: Conservation from Genes to Landscapes. Academic Press, 2020. https://doi.org/10.1016/B978-0-12-815507-3.00008-3.

Chave et al. (2005). Tree allometry and improved estimation of carbon stocks and balance in tropical forests. Oecologia, 145, 87-99.

C. Vancutsem, F. Achard, J.-F. Pekel, G. Vieilledent, S. Carboni, D. Simonetti, J. Gallego, L.E.O.C. Aragão, R. Nasi. Long-term (1990-2019) monitoring of forest cover changes in the humid tropics. Science Advances 2021

Cochrane, M.A. (2003). Fire science for rainforests. Nature, 421, 913–919.

De Wasseige, Carlos (ed), Martin (ed) Tadoum, Richard (ed) Eba'a Atyi, et Charles (ed) Doumenge. The Forests of the Congo Basin - Forests and Climate Change. Weyrich, 2015. Afrique centrale. https://agritrop.cirad.fr/578904/.

Dottori, Francesco; Alfieri, Lorenzo; Salamon, Peter; Bianchi, Alessandra; Feyen, Luc; Hirpa, Feyera (2016): Flood hazard map of the World - 100-year return period. European Commission, Joint Research Centre (JRC)

Gobush, et al.. 2021. Loxodonta cyclotis (2021). The IUCN Red List of Threatened Species

Groom, Quentin, Lian Jenna Wong, et Shyama Pagad. Global Register of Introduced and Invasive Species - Democratic Republic of Congo. s. d. https://doi.org/10.15468/vd6vcl.

Gudehus, Maja, Darren W. Pietersen, Michael Hoffmann, et al. « Black-bellied pangolin Phataginus tetradactyla (Linnaeus, 1766) ». In Pangolins, édité par Daniel W. S. Challender, Helen C. Nash, et Carly Waterman. Biodiversity of World: Conservation from Genes to Landscapes. Academic Press, 2020. https://doi.org/10.1016/B978-0-12-815507-3.00008-3.

Harmon, M. E., & Sexton, J. 1996. Guidelines for Measurements of Woody Detritus in Forest Ecosystems. US LTER Publication No. 20, University of Washington.

Hart & Maisels, 2018, Cercopithecus hamlyni. The IUCN Red List of Threatened Species 2019

Hunter et al. 2013, Panthera pardus

Ibanez et al. (2024). Damage to tropical forests caused by cyclones is driven by wind speed but mediated by topographical exposure and tree characteristics. Global Change Biology, 30, e17317

Jagoret, Patrick, Stéphane Saj, et Aurélie Carimentrand. « Cacaoculture agroforestière en Afrique : l'art de concilier production durable et services écologiques ». Perspective 54 (2020)

Koutika & Richardson (2019), Acacia mangium Willd: benefits and threats associated with its increasing use around the world

Krantz, Lasse, 2001. The Sustainable Livelihood Approach to Poverty Reduction. SIDA

Kummu, Matti, Maija Taka, et Joseph H. A. Guillaume. « Gridded Global Datasets for Gross Domestic Product and Human Development Index over 1990–2015 ». Scientific Data 5, no 1 (2018): 180004

Lemmens R. H. M. J., 2011. Prioria oxyphylla (Harms) Breteler. In : PROTA4U. Lemmens R. H. M. J., Louppe D., Oteng-Amoako A. A. (eds)

Lin, L., Lin, Q., and Wang, Y.: Landslide susceptibility mapping on a global scale using the method of logistic regression, Nat. Hazards Earth Syst. Sci., 17, 1411–1424, 2017 Malhi, Y., Gardner, T.A., Goldsmith, G.R., Silman, M.R., & Zelazowski, P. (2014). Tropical forests in the Anthropocene. Annual Review of Environment and Resources, 39, 125–159.

MIKE (2004). Forêt d'Afrique Centrale : Rapport final sur les relevés démographiques d'éléphants (2003-2004). Wildlife Conservation Society, USA.

Ndeko et al.(2025), Farmers' preferred traits, production constraints, and adoption factors of improved maize varieties under South-Kivu rainfed agro-ecologies, eastern D.R. Congo: implications for maize breeding

Newman, J. (1956). Optimum Stratified Sampling. Journal of the American Statistical Association, 51(273), 125–133

Olofsson, P., Foody, G. M., Stehman, S. V., & Woodcock, C. E. (2013). Making better use of accuracy data in land change studies: Estimating accuracy and area and quantifying uncertainty using stratified estimation. Remote Sensing of Environment, 129, 122-131. https://doi.org/10.1016/j.rse.2012.10.031*

Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & 16 Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. Remote sensing of Environment, 148, 42-57.

Penman, J., Gytarsky, M., Hiraishi, T., Krug, T., Kruger, D., Pipatti, R., ... & Wagner, F. (Eds.). (2003). Good Practice Guidance for Land Use, Land-Use Change and Forestry. Intergovernmental Panel on Climate Change (IPCC), National Greenhouse Gas Inventories Programme (NGGIP). Published by the Institute for Global Environmental Strategies (IGES).

Preferred by Nature. (2020). Analyse de risque sur la légalité du bois en République démocratique du Congo.

Robert E. Moïse, Réussir la foresterie communautaire en RDC : perspectives anthropologiques sur la gestion communautaire des forêts, 2019, Rainforest foundation UK, drc-moise-study-french.pdf

Rochegude, A., & Plançon, C. (2023). Cadre juridique et institutionnel du foncier en RDC. Comité technique « Foncier & développement ».

Sartoretto Eugenio, Tomassi Alessandra, Karpe Philippe. 2017. Analyse comparative des cadres juridiques régissant la gestion de la faune par les collectivités locales en Afrique centrale. Diversités et limites. Rome : FAO

Shapiro et al., « Forest condition in the Congo Basin for the assessment of ecosystem conservation status », 2021.
Schmerbeck et al (2024). *Acacia auriculiformis*

Shapiro, Aurélie C., Hedley S. Grantham, Naikoa Aguilar-Amuchastegui, et al. « Forest condition in the Congo Basin for the assessment of ecosystem conservation status ». Ecological Indicators 122 (mars 2021): 107268. https://doi.org/10.1016/j.ecolind.2020.107268.

Tailfer, Y., 1989 : La forêt dense d'Afrique centrale. Identification pratique des principaux arbres, Tome 1 (456p) et Tome 2 (1271p).

Trigg M; Birch C; Neal J; Bates P; Smith A; Sampson C; Yamazaki D; Hirabayashi Y; Pappenberger F; Dutra E; Ward P; Winsemius H; Salamon P; Dottori F; Rudari R; Kappes M; Simpson A; 23 Hadzilacos G; Fewtrell T. The credibility challenge for global fluvial flood risk analysis. ENVIRONMENTAL RESEARCH LETTERS 11 (9); 2016. p. 094014. JRC102849

U.S. Geological Survey (USGS). (2024). USGS Earthquake Catalog [Data set]. U.S. Geological Survey. Retrieved from https://earthquake.usgs.gov/earthquakes/search/

Vancutsem C., F. Achard, J.-F. Pekel, G. Vieilledent, S. Carboni, D. Simonetti, J. Gallego, L.E.O.C. Aragão, R. Nasi. Long-term (1990-2019) monitoring of forest cover changes in the humid tropics. Science Advances 2021

Van Wagner, C. E. 1968. The line intersect method in forest fuel sampling. Forest Science, 14(1): 20–26.

Warren, W. G., & Olsen, P. F. 1964. A line intersect technique for assessing logging waste. Forest Science, 10(3): 267–276.

World Bank Group. (2020). Doing business 2020: Comparing business regulation in 190 economies. World Bank.

Zanne, A. E., Lopez-Gonzalez, G., Coomes, D. A., et al. 2009. Global Wood Density Database. Dryad.

Zhang, L.; Zhang, Z. Wildfires and Climate Change as Key Drivers of Forest Carbon Flux Variations in Africa over the Past Two Decades. Fire 2025, 8, 333. https://doi.org/10.3390/fire8080333

C. Spatial and Biophysical Data

Ali, M., Taylor, D., Inubushi, K., & Tateishi, R. (2006). Effects of agricultural practices on methane emission from tropical peat soils. Chemosphere, 65(2), 253–259.

Copernicus Land Monitoring Service. (2025). Global Human Settlement Layer (GHSL) – Built-up grid. European Commission, JRC.

Copernicus. (2018). Copernicus Digital Elevation Model (DEM), 30m resolution. European Space Agency.

Crezee, B., et al. (2022). A high-resolution map of tropical peatland thickness. Nature Geoscience, 15, 173–179. 9](https://doi.org/10.1038/s41561-021-00892-9)

ESA (2022). ESA CCI Biomass Climate Change Initiative, Global Aboveground Biomass Map (2022). European Space Agency.

European Commission / JRC (2024). Tropical Moist Forest Dataset (TMF 2024). Joint Research Centre (JRC), European Commission.

Hirano, T., Segah, H., Kusin, K., Limin, S., Takahashi, H., & Osaki, M. (2009). Carbon dioxide emissions through oxidative peat decomposition on a burnt tropical peatland. Global Change Biology, 15(3), 650–664.

ISRIC – World Soil Information. (2006). SOTERCAF Database: Soil and Terrain Database for Central Africa. Wageningen, Netherlands.

Jauhiainen, J., Hooijer, A., & Page, S. E. (2012). Carbon dioxide emissions from an Acacia plantation on peatland in Sumatra, Indonesia. Biogeosciences, 9, 617–630.

Joint Research Centre (JRC). (2025). Tropical Moist Forest (TMF) dataset v3. Ispra, Italy.

Melling, L., Hatano, R., & Goh, K. J. (2007). Soil CO_2 flux from three ecosystems in tropical peatland of Sarawak, Malaysia. Tellus B: Chemical and Physical Meteorology, 59(5), 475–485.

NASA Jet Propulsion Laboratory. (2013). SRTM 30m Digital Elevation Data. Pasadena, CA, USA.

OpenStreetMap contributors. (2023). OpenStreetMap database. Retrieved from https://www.openstreetmap.org

Vancutsem C., Achard F., Pekel J.-F., Vieilledent G., Carboni S., Simonetti D., Marelli A., Gallego J , Long-term monitoring of tropical moist forest extent (from 1990 to 2019), EUR 30448 EN, Publications Office of the European Union, Luxembourg, 2020,

Web portal of the TMF dataset from the JRC : https://forobs.jrc.ec.europa.eu/TMF

D. Climate and Risk Data

ACMAD (African Centre of Meteorological Applications for Development) – Seasonal forecasts and climate bulletins. https://www.acmad.org

CSC (2013): Climate Change Scenarios for the Congo Basin. [Haensler A., Jacob D., Kabat P., Ludwig F. (eds.)]. Climate Service Centre Report No. 11, Hamburg, Germany, ISSN: 2192-4058.

CRuHM Project (Capacity Building in River Hydrology and Basin Modeling, Congo Basin) – River flood risk and hydrological datasets. (Bates et al., 2024, Interface Focus).

FEWS NET (Famine Early Warning Systems Network) – Agro-climatic and drought early warning for Central Africa. https://fews.net

Global Flood Monitoring System (GFMS, NASA) – Real-time fluvial flood monitoring. https://flood.umd.edu

Global Wildfire Information System (GWIS, JRC) – Satellite-based fire monitoring. https://gwis.jrc.ec.europa.eu

ICPAC (IGAD Climate Prediction and Applications Centre) – Regional climate outlooks (pan African). https://www.icpac.net

IPCC Data Distribution Centre (DDC) – Climate projections and scenarios (CMIP6). https://www.ipcc-data.org

Météo-RDC (Agence Nationale de Météorologie et de Télédétection par Satellite) – National meteorological observations and data (Kinshasa).

NASA NEX-GDDP-CMIP6 – Downscaled daily climate projections (~25 km). https://cds.nasa.gov/nex-gddp/

OFAC – Observatoire des Forêts d'Afrique Centrale (COMIFAC/JRC) – Climate, hydrology, and forest monitoring datasets. [https://www.observatoire-comifac.net](https://www.observatoire comifac.net)

ReliefWeb / UN OCHA Early Warning – Disaster and hazard alerts for DRC. https://reliefweb.int SADC Climate Services Centre (CSC) – Climate monitoring and forecasting for Southern & Central Africa.https://www.sadc.int

WorldClim v2 – High-resolution global climate data (historical + projections). https://www.worldclim.org

E. National Legal and Institutional Framework (DRC)

Gouvernement de la République démocratique du Congo. (2002). Loi n°011/2002 portant Code forestier.

Gouvernement de la République démocratique du Congo. (2006). Arrêté ministériel n°035/CAB/MIN/ECN-EF/2006 relatif à l'exploitation forestière.

Gouvernement de la République démocratique du Congo. (2009). Loi n°11/009 portant principes fondamentaux relatifs à la protection de l'environnement.

Gouvernement de la République démocratique du Congo. (2014). Décret n°14/018 fixant les modalités d'attribution des concessions forestières aux communautés locales.

Gouvernement de la République démocratique du Congo. (2022). Loi n°22/030 relative à la protection et à la promotion des droits des peuples autochtones pygmées.

Gouvernement de la République démocratique du Congo. (2025). Loi n°25/045 relative à l'aménagement du territoire.

Gouvernement de la République démocratique du Congo. (2023). Arrêté interministériel n°006/2023 & n°120/2023 fixant les modalités de répartition de la part des recettes issues de la vente des crédits carbone.

Ministère de l'Environnement Conservation de la nature, Eaux et Forêts (2006) - ARRÊTÉMINISTÉRIEL n° 020/CAB/MIN/ECN-EF/2006 portant agrément de la liste des espèces animales protégées en République démocratique du Congo.

Ministère de l'Environnement et Développement durable. (2019). Arrêté ministériel n°047/CAB/MIN/EDD/AAN/MML/05/2019 portant procédure d'approbation des investissements REDD+ en RDC.

Ministère de l'Environnement et Développement durable & Ministère des Finances. (2023). Arrêté interministériel n°006/2023 et n°120/2023 fixant les modalités de répartition de la part des recettes issues de la vente des crédits carbone.

F. National and International Reports

Democratic Republic of Congo (2018). Forest Reference Emission Level for REDD+ in the Democratic Republic of Congo. Ministry of Environment and Sustainable Development, Kinshasa.

DE SAINT MOULIN, L. et KALAMBO THIBANDA, J.-L., (Collaborateur), "Atlas de l'organisation administrative de la République Démocratique du Congo," GéoProdig, portail d'information géographique, http://geoprodig.cnrs.fr/items/show/189757.

DRC (MECNT). (2018). Forest Reference Emission Level of the Democra Republic of the Congo for the REDD+ Mechanism. Ministère de l'Environnement, Conservation de la Nature et Tourisme (MECNT), Kinshasa.

IUCN Red List of Threatened Species. « The IUCN Red List of Threatened Species ». https://www.iucnredlist.org/fr.

MEEDD / Forest Atlas RDC. Localités RDC – Locality dataset [Data set]. Forest Atlas – DRC. Retrieved from https://cod-data.forest-atlas.org/datasets/medd::localités-3/about

UN-REDD Programme, Forest Carbon Partnership « Stratégie cadre nationale REDD+ de la République Démocratique du Congo, résumé pour décideurs », 2012

World Bank Group – « Diagnostic sur l'autonomisation économique des femmes en RDC : Obstacles et opportunités » 2021

G. Intern reports

AMAR (2025), Rapport de mission portant sur l'appui à la structuration des communautés locales en Comités Locaux de Développement (CLD) dans les villages riverains des concessions de Conservation 03/24 de Lukolela et 04/24 de Lisala, dans le cadre de la mise en œuvre du projet REDD+ Dibétou, porté par Taranis Congo et exécuté par SWC Kongo.

AMAR (2025) Facilitation of obtaining Free, Prior and Informed Consent (FPIC) from local communities of the Mpama, Bongombo, Bongopa, Bokutu, Bwela, and Ndeke, Located Adjacent to Conservation Concessions 03/24 in Lukolela and 04/24 in Lisala, within the Framework of the Implementation of the REDD+ Dibétou Project, Implemented by SWC Kongo and Funded by the Investment Company Taranis Congo.

FORABOLA (2021), Plan d'aménagement concession 036/11-Lisala (*Forabola Forest Management Plan (2018*))

FORABOLA (2023), Etude d'impact environnemental et social des activites de l'exploitation de la concession forestiere No.36/11 de la societe forabola dans le territoire de lisala, secteurs de Ngombe Mombangi et Ngombe Doko, province de la Mongala en République Démocratique du Congo

Sodefor (2015) - Rapport d'inventaire d'aménagement Concession 036/11 – Lisala

SOFORMA (2008). Rapport socio-économique sur Lisala., RDC.

The Shared Wood Company (2023), Code of Conduct

The Shared Wood Company (2026), Etude d'Impact Environnemental et Social (EIES) des activités de conservation dans la concession forestière de conservation No 04/24. de la société Taranis Congo, pour la mise en œuvre du projet PIREDD Dibétou par la société The Shared Wood Company Kongo, dans le territoire de lisala, secteurs de Ngombe Mombangi et Ngombe Doko, province de la Mongala en République Démocratique du Congo

H. Other references

CAFI (2012), « STRATÉGIE-CADRE NATIONALE REDD+ DE LA RÉPUBLIQUE DÉMOCRATIQUE DU CONGO », République Démocratique du Congo
Central African Forest Initiative. (2025). Sustainable family agriculture in DRC's 145 territories. CAFI.
ClientEarth. (n.d). Ressources juridiques sur la gouvernance forestière en RDC. [https://www.clientearth.org] (https://www.clientearth.org)

Environews. (2025). 23 ans du Code forestier en RDC.

Fern. (2006). Gouvernance forestière en République démocratique du Congo. Fern.

Greenpeace. (2013). L'exploitation forestière illégale en République démocratique du Congo. Greenpeace Africa.

« Ngiri-Tumba-Maindombe, Service d'information sur les Sites Ramsar », https://rsis.ramsar.org/fr/ris/1784.

Taranis, https://taranis.eu/nature-based-solutions/

UN Multi-Partner Trust Fund Office, Programme Integre REDD+ du Mai-Ndombe (PIREDD Mai-Ndombe)/ World Bank (TF071553)
UN (definition youth), https://www.un.org/fr/global-issues/youth

UNDP (United Nations Development Programme) - République démocratique du Congo

UNICEF (2023-2024), Demographic and Health Survey data for Mongala Province

One Earth. « Central Congolian Lowland Forests ». 30 janvier 2023.
https://www.oneearth.org/ecoregions/central-congolian-lowland-forests/

Worldostats - Chimpanzee Population by Country – Wildlife Distribution (2025),
https://worldostats.com/country-stats/chimpanzee-population-by-country

APPENDIX : REGULATIONS RELATED TO WORKING CONDITIONS

An assessment of the legal framework in the environmental and social fields was conducted prior to the launch of the Project. In terms of regulations related to employment and working conditions, all applicable laws were identified and analyzed :

- Law No.015-2002 of 16 October 2002 (Labor Code);
- Order No.063/CAB/PVPM/ETPS/2011, of 22 July 2011, on the renewal of fixed-term employment contracts;
- Ministerial Order No.062/CAB/PVPM/ETPS/2011, of 22 July 2011, establishing the form, proof, and endorsement of the employment contract;
- Decree No. 252/22 of May 30, 2025 establishing the guaranteed interprofessional minimum wage, minimum family allowances, and the equivalent value of housing;
- Order No.68/11, of 17 May 1968, on overtime pay;
- Law No. 15/013 of August 1, 2015, on the implementation of women's rights and gender equality;
- Ministerial Order No.12/CAB.MIN/TPS/114/2005, of 26 October 2005, prohibiting sexual or moral harassment in the performance of the employment contract;
- Ministerial Order No.12/CAB.MIN/TPS/115/2005, of 26 October 2005, establishing the procedures for the fulfilment by the employer of the obligation to provide transport for employees;
- Ministerial Order No.12/CAB.MIN/TPSI/045/08, of 8 August 2008, setting the conditions of child labor;
- Ministerial Order No.70/0016, of 11 August 1970, on the company's regulations;
- Order No.12/CAB.MIN/ETPS/043/2008, of 8 August 2008, setting the conditions for the organization and operation of safety, hygiene, and workplace improvement committees;
- Order No.01/76, of 21 January 1976, on the company medical or health service
- Ministerial Decree No. 048/CAB/VPM/METPS/2015 of October 8, 2015, amending and supplementing Ministerial Decree No. 12/CAB. MIN/TPS/ar/NK/054/ of October 12, 2004, establishing the terms and conditions for the representation and electoral appeal of workers in companies or establishments of any kind;
- Decree No. 012/003 of January 19, 2012, establishing the statutes of a public institution called the "National Employment Office," abbreviated as "ONEM.";
- Order No.74/098, of 6 June 1974, on the protection of the national workforce amended and supplemented by Ordinance No. 75/304 bis of November 26, 1975;
- Ministerial Order No.87/2005, of 21 January 1987, determining the conditions for hiring expatriates
- Order No.12/CAB.MIN/ETPS/080/2008, of 19 September 2008, establishing the list of jobs reserved for Congolese nationals
- Ministerial Order No.12/CAB.MIN/TPS/112/2005, of 26 October 2005, setting the maximum percentages of foreign employees in a company
- Ministerial Order No.005/CAB/PVPM/ETPS/2010, of 1 April 2010, laying down the procedures for the annual declaration of the situation of the workforce;
- MINISTERIAL DECREE 0057/71 of December 20, 1971, regulating safety in the workplace. - Text
- MINISTERIAL DECREE 0013 of August 4, 1972, establishing hygiene conditions in the workplace;

- DEPARTMENTAL DECREE 28/75 of October 30, 1975, relating to pre-employment and return-to-work examinations, medical examinations required due to workers' exposure to specific risks, and the performance of light and healthy work;
- MINISTERIAL DECREE 68/12 of May 17, 1968, on weekly rest - Labor regulations;
- Law No. 22/030, of 15 July 2022, on the protection and promotion of rights of the indigenous pigmy peoples (Law 22/030)