Forest Carbon Partnership Facility (FCPF) Carbon Fund **ER Monitoring Report (ER-MR)**	
ER Program Name and Country:	Mai-Ndombe ER-Program, Democratic Republic of Congo
Reporting Period covered in this report:	01-01-2021 to 31-12-2022
Number of FCPF ERs:	2,861,010 tCO_2e
Quantity of ERs allocated to the Uncertainty Buffer:	721,262 tCO_2e
Quantity of ERs allocated to the Pooled Reversal Buffer:	1,226,145 tCO_2e
Number of FCPF ERs from enhanced Removals through afforestation/reforestation (A/R)	n.a.
Number of FCPF ER from High Forest Low Deforestation (HFLD)	2,861,010 tCO_2e
Date of Submission:	10-14\5-2026
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LIST OF ACRONYMS

AD	:	*Activity Data*
AGB	:	*Above Ground Biomass* – Biomasse épigée
AOI	:	*Area of Interest*
AT	:	Autres Terres
BGB	:	*Below Ground Biomass* – Biomasse souterraine
BSP	:	Benefit Sharing Plan
CAFI	:	Central African Forest Initiative
CFCL	:	Concession des Forêts des Communautés Locales / Concession of Forests to Local Communities
CAFI	:	*Central Africa Forest Initiative* – Initiative pour la Forêt d'Afrique Centrale
CCNUCC	:	Convention-Cadre des Nations Unies sur le Changement Climatique
CIF	:	*Climate Investment Fund* – Fonds d'Investissement Climat
CM&M	:	*Carbon Map and Model* – Carte de Carbone et Modèle
CN-REDD	:	Coordination Nationale REDD / National REDD Coordination
CARG	:	Conseil Agricole Rural de Gestion / Rural Agricultural Management Advisory
COCOSI	:	Comité de Coordination des Sites / Site Coordination Committee
COLO	:	Communauté Locale / Local Community
COPIL	:	Comité de Pilotage / Steering Committee
COS	:	Carbone Organique du Sol
CRCA	:	Culture et Régénération de Culture Abandonnée
CTPM-PF	:	Comité Technique Permanent Multisectoriel de la Planification Familiale / Permanent Multisectoral Technical Committee for Family Planning
Cu	:	Culture
DBH	:	Diameter at Breast Height
DHS	:	Forêt dense Humide Sempervirente de basse et moyenne altitude
DIAF	:	Direction des Inventaires et Aménagements Forestiers / Forest Inventory and Management Directorate
DS	:	Forêt dense Sèche de basse et moyenne altitude
RDC	:	Democratic Republic of the Congo
EF	:	Emission Factors
ER	:	Emission Reductions
ER-MR	:	Emissions Reductions-Monitoring Report
ERPA	:	Emission Reductions Payment Agreemen
ERP	:	Emission Reductions Program
ER-PD		Emission Reduction Program Document
FAO	:	*Food and Agriculture Organization* – Organisation des Nations Unies pour l'Alimentation et l'Agriculture
FC	:	Fraction de carbone ou Forêt Claire
FCPF	:	*Forest Carbon Partnership Facility* – Facilitation du partenariat pour le carbone forestier
FDH	:	Forêt Dense Humide / Dense wet forest
FDHSH	:	Forêt Dense Humide sur Sol Hydromorphe / Dense humid wetland forest
FDHTF	:	Forêt Dense Humide sur Terre Ferme / Dense wet forest on dry land

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FE	:	Facteur d'Émission
FONAREDD	:	Fonds National REDD / National REDD Fund
FREL	:	Forest Reference Emission Level
FSc	:	Forêt Secondaire
FSFC	:	Forêt Sèche ou Forêt Claire
GES	:	Gaz à Effet de Serre
GFOI	:	*Global Forest Observation Initiative* – Initiative Globale pour l'Observation de la Forêt
GIEC	:	Groupe Intergouvernemental d'Experts sur l'Évolution du Climat
HFLD	:	High Forest, Low Deforestation
ICRAF	:	*World Agroforestry Centre*
IFLMP	:	*Improved Forest Landscape Management Project*
IFN	:	*National Forest Inventory*
IPCC	:	Intergovernmental Panel on Climate Change
IPs	:	Indigenous Peoples
JAFTA	:	*Japanese Forest Technology Association* – Association Japonaise pour la Technologie Forestière
JICA	:	*Japanese International Cooperation Agency* – Agence Japonaise de Coopération Internationale
LCC	:	Land Cover Change
LDC	:	Local Development Committee
LiDAR	:	*Light Detection And Ranging*
LU/LC	:	*Land Cover / Land USE*
MEDD	:	Ministry of Environment and Sustainable Development
MF	:	Methodological Framework
MGD	:	Methods Guidance Document
MMR	:	Measuring, Monitoring and Reporting
NRMP	:	Natural Resource Management Plan
OPERPA	:	*Operationalization of the Emissions Reduction Payment Agreement*
OSFAC	:	Observatoire Satellital des Forêts d'Afrique Centrale / Central African Forest Satellite Observatory
OGF	:	Observatoire de la Gouvernance Forestière
PES	:	Payment for Environmental Services
PI	:	Plan d'Investissement
PIF	:	Forest Investment Program
PMU	:	Program Management Unit
PRE	:	Programme de Réduction des Émissions
PRE-IFN	:	Pré-Iventaire Forestier National / Pre-National Forest Inventory
PTC	:	Plateforme Technique de Concertation
QA/QC	:	Quality Assurance/Quality Control
RAC	:	Rural Agricultural Committee
REDD	:	Reducing Emissions from Deforestation and Forest Degradation
RE		Reduction Emission
RNTL	:	Réserve Nationale de Tumba Lediima / Tumba Lediima National Reserve
R-PP	:	*Readiness Preparation Plan*
SA	:	Forêt Secondaire Adulte
SEPAL	:	*System for Earth Observation Data Access, Processing and Analysis for Land Monitoring*

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SJ	:	Forêt Secondaire Jeune
SMC	:	*Southern Mapping Company*
TH	:	Terres Humides

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1 IMPLEMENTATION AND OPERATION OF THE ER PROGRAM DURING THE REPORTING PERIOD

1.1 Implementation status of the ER Program and changes compared to the ER-PD

1.1.1 Update on the implementation of ERP activities

The Emission Reduction Program (ER) in Mai-Ndombe province has reached several important milestones that show its effective operationalization. In particular, the Democratic Republic of Congo (DRC) has benefited from a first payment based on the results of emissions reductions verified and transferred to the World Bank, under the ERPA contract signed in September 2018, which came into force in July 2022.

Key milestones include:

1. Submission and validation of the first monitoring report (2019-2020) by a Verification and Validation Body (VVB), enabling the first World Bank payment to be made for the emissions reductions generated.

2. Technical capacity building for the MRV team of the Forest Inventory and Management Department (DIAF), notably through specialized training provided by the University of Maryland, to improve knowledge and application of tools for analyzing activity data and calculating emissions reductions.

3. The start-up of the OPERPA project, financed in part by resources from the first payment, whose aim is to strengthen the implementation of the ERPA through the reinforcement of institutional capacities, monitoring systems and coordination, at both provincial and national levels.

4. The continuation and extension of projects, such as PIREDD Plateaux, PIREDD Mai-Ndombe, and community projects financed by the Dedicated Grant Mechanism (DGM). These projects have consolidated the results of the first implementation cycle.

5. Maintaining multi-sectoral approaches, combining sustainable agriculture, community forest management, local governance and involvement of indigenous peoples and local communities (PACL).

The Program relies on a system that includes: (i) the MRV operated by DIAF with the support of the University of Maryland, ensuring the operational deployment of the MRV system, guaranteeing the transparency and scientific rigor of the measurements; (ii) the UC-PIF for management and coordination; (iii) operational interfaces with embedded projects (e.g., Wildlife Works), optimizing synergies and avoiding redundancies; and (iv) a multisectoral approach ensuring the full and effective participation of the PACL, in accordance with international standards of participatory governance.

The effectiveness of this system is evidenced by:

- Regular MRV deliverables that have enabled the quantification of emission reductions according to a methodology replicable at the national level;
- Holding of governance fora such as COPIL/PTC, the diversity of PACL participation, and controlled decision-making timelines;
- The operationalization of the BSP and the disbursement rate and publication of information[1];
- Data exchanges with embedded projects and their integration into the national registry, avoiding any double counting.

The results are published and are subject to a continuous improvement loop (monitoring of indicators, corrective actions, and reassessment at each reporting period).

During the MR2 period, no major changes were made to the technical assumptions and fundamental principles of the ER Program as defined in the ER Program Document (ER-PD). The strategic framework remains focused on a landscape-based, inclusive and results-oriented approach.

[1] https://www.worldbank.org/en/news/press-release/2025/06/06/drc-afe-communities-set-to-benefit-as-country-receives-19-47-million-for-reducing-deforestation-emissions

1.1.2 Update on driving factors and lessons learned

The direct drivers of deforestation previously identified - slash-and-burn agriculture, wood-energy production, uncontrolled fires, mining and logging - remain relevant. Enhanced monitoring efforts have led to a better understanding of the spatio-temporal dynamics of these drivers. The implementation of PSATs (Plans Simples d'Aménagement du Terroir), combined with agricultural intensification, continues to be key for mitigating the risk of leakage.
Several lessons have been learned from the first cycle:

- The importance of synchronizing technical efforts (MRV), community actions and local governance.
- Improved planning of interventions, particularly in identified critical areas.

With the Emission Reductions Purchase and Sale Agreement (ERPA) coming into effect in July 2022, several key actions have been completed:

1. Submission of the approval letter in October 2019.
2. Finalization and validation of the Benefit Sharing Plan[2], drawn up with stakeholder participation between 2019 and 2020, presented to the Provincial Steering Committee on April 21, 2022 in Inongo, and validated at national level on May 6, 2022 in Kinshasa. The BSP was updated in December 2024 mainly to reflect changes in the flow of funds arrangement. The revised BSP is now the operational framework for distributing results-based payments from the ERPA, following the first payment made in 2025.
3. Revision and submission of an updated reference level, aimed at improving the accuracy of activity data relating to deforestation, forest degradation and the increase in forest carbon stocks. This process was conducted with the support of the University of Maryland and national institutions, with publication of preliminary results in October 2020 and final results in January 2021.
4. Designation of the UC-PIF (Unité de Coordination du Programme d'Investissement Forestier) as the ER Program management unit.
5. Development of an operational action plan, detailing the steps required to demonstrate the ability of the Ministry of the Environment and Sustainable Development to transfer ownership of emission reductions.
6. Mobilization of USD 5 million in funding to operationalize and strengthen the components of the ER Program.
7. Submission and validation of the first monitoring report (2019-2020) by the OVV, enabling the first payment to be made by the World Bank.
8. Start of negotiations with potential buyers with a view to monetizing surplus credits.

In terms of implemented activities contributing to emissions reduction, the ERP continues to rely on a holistic approach that recognizes the link between sustainable forest management and use, community agricultural development and improved forest governance. For the period 2021-2022, the ERP's emission reduction results are based on activities implemented by:

- Improved Forest Landscape Management Project (IFLMP, P128887)
- Programme d'Investissement Forestier - Componante 1 Projet Intégré REDD+ dans les Plateaux (PIREDD Plateaux)
- Additional funding for the Maï-Ndombe integrated REDD+ project (P162837, PIREDD Maï-Ndombe) from CAFI
- Additional funding for the Maï-Ndombe integrated REDD+ project from GEF (P160182)
- Dedicated grant mechanism: Forest-dependent communities support project (P149049), supplemented by additional CAFI funding to support indigenous peoples.
- Mai Ndombe REDD+ project implemented by Wildlife Works

In addition to directly mitigating the drivers of deforestation within the geographical scope of the Emission Reduction Programme (ERP), the Programme adopts a proactive strategy to identify and address the potential displacement of

[2] updated_final_benefit_sharing_plan_drc_feb_2025.pdf

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deforestation and forest degradation pressures to surrounding areas. This preventive strategy is based on the critical dimensions of displacement:

Spatial Displacement of Activities
The Programme anticipates and monitors the migration of activities that contribute to deforestation—such as extensive agriculture, wood energy exploitation, and artisanal logging—to areas of influence located on the periphery of the project boundary.

Integrated Mitigation Strategy
The displacement mitigation strategy employs a multidimensional approach, integrating five complementary intervention levers:
(i) Spatial Planning and Agricultural Intensification
The deployment of Simple Land Use Plans (PSAT) is coupled with agricultural intensification initiatives designed to sustain and enhance yields. Supported by the development of structured value chains, this approach enables the Programme to meet demand while preventing the expansion of agricultural activities into new areas.
(ii) Strengthened Governance and Incentive Mechanisms
Robust governance measures are established and reinforced by sustainable economic alternatives, notably through the implementation of Payments for Ecosystem Services (PES). These mechanisms provide local communities with alternative sources of income, reducing pressure on forests.
(iii) Institutional Coordination
Effective coordination with provincial departments ensures that interventions are coherent and that sectoral policies are aligned with the Programme's forest conservation objectives.
(iv) Targeted Redistribution of Benefits
The Benefit-Sharing Plan (BSP/PPB) incorporates disbursement mechanisms strategically directed towards areas of influence, creating direct economic incentives for conservation in regions at risk of displacement.
(v). Monitoring and Evaluation System: A robust monitoring and evaluation system is established to track progress, assess the effectiveness of interventions, and ensure adaptive management throughout the Programme's implementation.

The implementation of this strategy is rigorously monitored and documented in accordance with Indicator 17.3, utilizing several measurement instruments:

- Direct Operational Monitoring: Systematic controls are conducted on the transport of coal and wood flows, enabling early detection of changes in supply chains and operational practices.
- Integrated Monitoring System: A dedicated system combines remote sensing to track forest loss, analyzes wood and charcoal production statistics, and conducts household surveys to assess shifts in community practices and incomes.
- Evaluation of Intervention Effectiveness: The outcomes of PSAT implementation and agricultural intensification activities are continuously evaluated, allowing for strategic adjustments based on demonstrated field effectiveness.

This systems-based approach enables the prioritization and targeted management of displacement risk sources, ensuring full compliance with Criterion 17 of the Methodological Framework and safeguarding the environmental integrity of the Program.
In addition to the 2022[3] Annual Report, which documents the implementation of these structures at the village land level, the ERPA project document for the Province of Mai-Ndombe outlines clear objectives through targeted investments. These include the development and validation of 1 provincial and 8 territorial Land Use Planning (TA)

[3] Rapport_annuel_2022.pdf: https://www.dropbox.com/scl/fi/eun6qw74rskidrtpapr6e/Rapport_annuel_2022.pdf?rlkey=3nrb9kxqz6d91mr2igbqh7j4y&st=su6s6v9x&dl=0

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plans, as well as 25 TA plans for ETDs (Decentralized Territorial Entities), the validation of 531 new PSATs, and the facilitation of 1,200 PSATs over a three-year period.
The project also aims to establish an operational strategic monitoring system for land conflict risks. With a target of 80% of groupings or chiefdoms/sectors covered by community land registries and local land charters, the initiative is expected to deliver significant land restoration and agricultural outcomes, including 9,730 ha of agroforestry, 3,710 ha of oil palm in savannah areas, 5,000 ha of Farmer-Managed Natural Regeneration (FMNR) on former plantations, 15,000 ha of community forests placed under protection, and 2,797 ha of perennial crops on degraded forest land. Additionally, three structured and operational sectors — coffee, cocoa, and palm oil — alongside a structured beekeeping sector will be established. The project further supports 2 AF-GEF conservation sub-projects and the implementation of Simple Management Plans (SMPs) for 4 CFCLs covering 350,000 hectares of forest.
The first payment under the CAVRE, amounting to USD 19,479,010, enabled the allocation of USD 17,169,861.91 as a reserved share for investments, to be implemented as an Integrated REDD+ Project benefiting indigenous peoples and local communities within the performance-based payment framework.

Table 1-1. Projects supporting the implementation of the ERP activities.

Project	**Amount**	**Period**	**Status update**
Improved Forest Landscape Management Project (IFLMP, P128887), Component 1, Integrated Project REDD+ Plateau (PIREDD Plateau)	14,2 million USD (PIREDD Plateau)	April 2015 - June 2020	The following results have been achieved: • 4070 hectares of agroforestry have been established out of the 5,000 hectares planned, and 13,994 hectares of savannahs have been protected (8,750 hectares have been well preserved) • 329 PES contracts signed with 155 LDCs out of the 215 that have been created/revitalized • Rural Agricultural Management Committees (CARG) supported at the rate of 1 CARG per Territory • 360,472.75 were paid to communities in the form of PES for community use (schools, wells, etc....) • 11,573 beneficiary households (of which 8002 male-headed households, 3551 female-headed households, 20 concessionaires/small farmers (of which 1 is female)
Improved Forest Landscape Management Project (IFLMP , P128887), Additional funding for Maï-Ndombe REDD+ project (P162837, PIREDD Maï-Ndombe)	18,22 million USD	May 2018 – Dec 2022	The following results were achieved in the first phase of the project. These include: • 480 Natural Resource Management Plans (NRMPs) validated • 19 Rural Agricultural Management Committees (RACs) including 4 Territories and 15 Sectors revitalized • 1,690 ha of oil palm and 1,800 ha of acacia put in place, 835 ha of perennial crops put in place, 9,936 ha of savannah put in conservation, • 2,194 ha of conservation and/or sustainable forest put in place,

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			• 1,697. 986.39 USD paid to communities in the form of payment for environmental services (About 33% of this amount was received by women beneficiaries of project activities), 20 bridges and 8 culverts built, 4 office buildings built, • 231 km of rural roads maintained, • 1 mini-oil mill installed and operational • 1 cocoa processing center installed and operational • 6 micro-projects for indigenous populations • 1 Permanent Multisectoral Technical Committee on Family Planning (CTMP-PF) set up • 4 administrative buildings constructed, • 9,608 farmers (including 3,205 women and 497 IPs) and 76 concessionaires/farmers (including 9 women and 2 IPs) direct beneficiaries of the project's interventions, 130,562 people were sensitized, including 99,093 men (76%), 31,469 women (24%), 10,774 indigenous people (8%) and 119,788 Bantu (92%).
Improved Forest Landscape Management Project (IFLMP, P128887), Additional funding for Maï-Ndombe REDD+ project (P160182)	6,2 million USD	June 2019 – July 2021	• Launching of awareness-raising activities for local communities and Indigenous Peoples on the sustainable management of biodiversity in 19 of the 75 Terroirs selected as having a high biodiversity value potential. • Carry out biodiversity inventories in the 19 Terroirs. • 4 local community forest concessions (CFCL) are being established. These are: Djoko (47,496 ha) and Losomba/Bakonda (42,884 ha) in Kiri Territory, Nkalontulu/Bolendo (48,209 ha) in Oshwe Territory, and Boototango/Mpenge (44,027 ha) in Inongo Territory. • Socio-economic surveys and multi-resource inventories conducted in the 4 CFCLs. • Community sensitization, completion of socio-economic surveys and identification of sites for the implementation of community REDD+ sub-projects (Mpenge with 14 terroirs in the Inongo Territory and Mbantin with 10 Terroirs in the Kutu Territory) • 10 new potential microprojects in favor of IPs identified, • Deployment of the Complaint Management Mechanism in the area in the Tumba Lediima National Reserve (RNTL), • establishment of the Site Coordination Committee (COCOSI) in the RNTL, (viii) 2 sub-microprojects on bioprospecting developed.

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DGM : Support to forest dependent communities (P149049)	6 million USD, Maï Ndombe is one of the provinces where the project is implemented	April 2016 - July2021	• Drafting of the roadmap containing the priority actions to be carried out in order to integrate the concerns of IPs in the reform being developed in the areas of land use planning, land tenure and community forestry, • Accompanying the communities of Bakwangombe - Tshiefu in the villages of Bondon, Mitsha, Kombe and Tongonuena to obtain the titles of four Forest Concessions of Local Communities (CFCL), • Validation of 3 microprojects in favor of IPs and COLOs of the territories of Kabinda, Lubao and Lubefu validated and ready for financing, • Elaboration of 5 microprojects in favor of IPs of the territories of Yahuma, Opala, Banalia, Bafwasende and Mambasa
Wildlife Works Maï Ndombe project		Since 2011	• Halting planned legal and unplanned illegal logging, charcoal production and slash and burn agriculture. • School construction, repair and supply • Community engagement – Local Development Committees (CLDs) • Health care improvements - Mobile Medical Clinic and Emergency Response System; • Agroforestry and demonstration gardens • Participatory mapping, with workshops planned for Lobeke and Mbale • Bridge repair and road clearing was performed along two main routes in the Project Area; Improved lake transportation for local communities. Full report for the 2017-2020 monitoring period is available at: https://registry.verra.org/app/projectDetail/VCS/934

1.2 Update on major drivers and lessons learned

The main drivers of forest degradation and deforestation remain the same as those described in the ERPD. Slash-and-burn agriculture, wood energy production, uncontrolled bushfires, mining and oil exploitation, artisanal logging, and industrial logging are identified as the primary direct drivers of deforestation. Indirect factors or underlying causes identified include: poverty, lack of economic and technical alternatives, poor natural resource management, unregulated land tenure, population growth, and increased demand for agricultural products, charcoal, and land. For more information on the drivers of deforestation and forest degradation in the context of the ER program, please refer to the Democratic Republic of Congo's ERPD. In order to support the generation of ERs in the program area and to minimize the risk of displacement, MEDD will continue to monitor the dynamics of emissions from

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deforestation and forest degradation and invest in sustainable practices in agriculture, forestry, and land management in general.

Slash-and-burn agriculture and charcoal production pose a medium risk for potential leakage and displacement to the districts outside of the ER Program. However, no harmful activities were prohibited inside of the ER Program as part of the strategies to minimize potential displacement. Improvements on practices are based on incentives for agricultural intensification through the activities of the PI-REDD Plateaux and Mai-Ndombe project, limiting the risk of leakage through displacement of slash-and-burn agriculture to other areas. Conversely, charcoal production is typically a by-product of shifting cultivation, i.e. the wood which is cut to clear areas for agricultural production, is used for charcoal production. Considering the linkage between clearing land for agricultural activities and charcoal production and the activities implemented to intensify agriculture production, the risk of shifting charcoal production to areas outside of the ER Program area is being addressed too. In addition, the PI-REDD supported the development of development of simple land management plans ('PSAT') at terroir level that contribute to structure charcoal production in sustainable rotation cycles establishing the basis for sustainable charcoal production. Finally, leakage due to displacement of artisanal logging has been considered low and has been addressed through the creation of community led concessions which helped to better plan and structure the logging activities conducted by communities.

The drivers of deforestation and forest degradation under the ER program remain the same, namely slash-and-burn agriculture, wood energy production, uncontrolled bush fires, mining and oil exploitation, artisanal logging, and industrial logging. All strategies described in the emissions reduction program are being implemented to avoid displacement of emissions. The risk of displacement is always assessed and classified as medium for slash-and-burn agriculture, medium for fuelwood production, high for artisanal logging and low for industrial logging. The emissions reduction program has made every effort to minimize displacement of emissions to an area outside the program boundaries and, if it exists, it will be minimal, as most of the measures proposed to address drivers of deforestation and forest degradation are primarily based on incentives and valuation of non-carbon benefits rather than coercive measures that will result in displacement of drivers of deforestation. Some of these elements have been implemented by projects under the Emissions Reduction Program (ERP), notably the Projet de Gestion Améliorée des Paysages Forestiers (PGAPF) and the Projet Intégré REDD+ dans le Mai-Ndombe, as detailed in the Rapport 2022 du Programme d'Investissement pour la Forêt de la RDC (pages 14-20)[4].

Experience feedback confirms that incentives (PSAT, intensification, BSP) are more effective and less risky than purely coercive approaches, if payment predictability and usage security are ensured. Targeting charcoal supply areas reduces activity shifts when coupled with traceability and the dissemination of improved stoves. Inter-project coordination and community monitoring allow for rapid corrections via alert thresholds (remote sensing, deforestation alert system, access channels to MGP/FGRM). However, fluctuations in charcoal prices can generate market leaks; these call for a mix of incentives/light control, conditionalities (non-expansion clauses, usage agreements), and the extension of PSAT along risk corridors. Implementation and adjustments are monitored through dedicated indicators: PSAT coverage of influence areas/corridors, hectares intensified under agreements, BSP disbursement rates and predictability, response times to alerts, proportion of traced charcoal, dynamics of forest losses in the rings.

1.3 Methodological deviations

Intentionally left blank as not methodological deviations have occurred for MR2

[4] Rapport_Annuel 2022.pdf :https://www.dropbox.com/scl/fi/eun6qw74rskidrtpapr6e/Rapport_annuel_2022.pdf?rlkey=3nrb9kxqz6d91mr2igbqh7j4y&st=su6s6v9x&dl=0

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2 SYSTEM FOR MEASUREMENT, MONITORING AND REPORTING EMISSIONS AND REMOVALS OCCURRING WITHIN THE MONITORING PERIOD

2.1 Forest Monitoring System

The monitoring system uses the same methods for quantifying emissions and removals as the FREL to produce fully consistent results as a basis for quantifying emission reductions. Activity Data is estimated using the same Approach 3 method (i.e. sampling using the same methodology). Monitoring of Activity Data (AD) will be done with a probability-based sample of time-series imagery. Emission Factors will be equivalent to those used in the FREL, therefore being consistent with Indicators 14.1 - 14.3 of the MF. Uncertainty related to the quantity of emission reductions will be estimated using Monte Carlo methods. Underlying sources of error in data and methods for integrated measurements of deforestation, forest degradation and carbon stock enhancements (e.g. as in a national forest inventory) will be combined into a single combined uncertainty estimate and will be reported at the two-tailed 90% confidence level.

Monitoring occurs at different levels and for different purposes. Hence monitoring can be differentiated as follows:

- **The carbon accounting monitoring system** that is used to report emissions and removals (based on measured activity data) to third parties (i.e. Carbon fund) during the program period is operated by the Program Management Unit (PMU). The PMU will carry out QA/QC measures – either itself or through third parties – to ensure a high quality of monitoring results prior to verification. (The present section describes this monitoring level).
- **Performance monitoring of different emission reduction activities** will be carried out by operators and executing agencies. Here, the PMU will take a verifying role. The monitoring of performance of activities is the basis to implement the benefit-sharing plan.

Measuring, Monitoring and Reporting (MMR) serves the following objectives:

- The primary objective is to monitor land cover change that occurs during the implementation of the ER Program. This system will allow for the subsequent comparison between program emissions and the reference level, leading to the quantification of emission reductions (ERs) which may in turn be sold and generate carbon revenues for ER Program stakeholders.
- The MMR system shall quantify deforestation and degradation in a spatially explicit manner, thereby facilitating the just sharing of financial benefits, based on performance.
- Finally, the MMR system will assess individual activities and provide valuable feedback to the ER Program that could in turn refine ER Program investment strategy and planning. The ER Program plans to integrate the MMR system into its overall adaptive management strategy: MMR results will lead to re-investment of carbon revenues in the ER Program for various high-performing emission reduction activities.

The MMR for the ER Program (sub-national MMR design) was designed to be harmonized with the ER Program's reference level design. As such, the MMR system will employ a sampling approach that utilizes identical manual/visual classification rules used for calculation of the ER Program REL. This will allow full consistency with the methods used to estimate the Activity Data for the FREL.

Table 2-1: ER Measurement, Monitoring and Reporting System Attributes

Attribute	Advantage
Sampling approach design	Harmonization with reference level model, allowing for accurate calculation of ERs. Primary advantage of sample alignment is the availability of historical

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	land cover information for each sample, allowing for the application of amelioration model.
Flexible sample design	Adaptive management allowing for high sample density in AOIs. This leads to greater precision and accuracy of these areas. The different sampling intensity per AOIs will be considered using a stratified estimator.
Use of various spatial-resolution remote sensing imagery.	Adaptive management / utilization of high-resolution imagery in different areas throughout the ER Program area, allowing for greater precision of ER estimates in AOIs.

2.1.1 Organizational structure

The National Forest Monitoring System (SNSF) of the Democratic Republic of Congo (DRC), which generates information for REDD+ Measurement, Reporting and Verification (MRV), was established in line with the Warsaw Framework for REDD+ in 2009 to access results-based payments. Following the adoption of the REDD+ National Framework Strategy by the Council of Ministers in 2012, the SNSF was developed to cover all land use and land use change at national level, in line with the 2003 IPCC Good Practice Guidelines. The system is now operational for the Measurement, Reporting and Verification of land use change in the AFOLU sector (agriculture, forestry and other land uses).
The SNSF comprises two data collection mechanisms:

- The first is the Satellite Land Monitoring System (SLMS), which collects data on land use and land change (Activity Data). The institution responsible for SLMS is the Direction des Inventaires et Aménagement Forestiers (DIAF).
- The second data collection mechanism is the National Forest Inventory (IFN), which collects field forestry data to estimate and update the country's emission factors (EF). This part of the SNSF is also managed by the DIAF.

Other government bodies involved in the REDD+ program are:

- The Coordination Nationale REDD+ (CN-REDD), which manages the REDD+ process and maintains the national REDD+ register,
- The Direction du Développement durable (DDD), which handles greenhouse gas (GHG) inventories.

The Mai-Ndombe Province Emission Reduction Program relies on national MRV tools for calculating emission reductions and reporting to ensure consistency.

2.1.2 Data collection, processing, consolidation and communication processes

The monitoring system uses the same methods for quantifying emissions and removals as those used for constructing the reference level (FREL), in order to produce fully consistent results as a basis for quantifying emission reductions. Activity data are estimated using the same approach 3 method (i.e. sampling using the same methodology). Activity data (AD) will be monitored using a probabilistic sample of time-series images. Emission factors will be equivalent to those used in the FREL (see MR1 Appendix 4: CARBON ACCOUNTING - ADDENDUM TO ERPD), and therefore consistent with indicators 14.1 to 14.3 of the Methodological Framework (MF). The uncertainty associated with the quantity of emission reductions will be quantified using Monte Carlo methods. The underlying sources of error in the data and methods of integrated measurements of deforestation, forest degradation and

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forest carbon stock enhancement (for example, as in a national forest inventory) will be combined into a single overall uncertainty estimate and reported at the two-tailed 90% confidence level.

Monitoring takes place at different levels and for different purposes. We can therefore differentiate monitoring as follows:

- The carbon accounting monitoring system used to report emissions and removals (based on measured activity data) is being implemented by DIAF with technical support from third parties (including FCPF and the University of Maryland) during the program period. DIAF will carry out quality assurance/quality control measures, either itself or through third parties, to ensure a high quality of monitoring results prior to verification. (This section describes this level of monitoring).
- Performance monitoring of the various emission reduction activities will be carried out by DIAF. Within this framework, the Program Management Unit (PMU) will play the role of verifier. Monitoring the performance of activities forms the basis for implementing the benefit-sharing plan.

Measurement, monitoring and reporting (MMR) has the following objectives:

- The main objective is to monitor land cover changes that occur during the implementation of the ER program. This system will enable subsequent comparison of program emissions with the baseline, leading to the quantification of emission reductions (ERs) which can in turn be sold and generate carbon revenues for ER program stakeholders.
- The MMR system will quantify deforestation and degradation in a spatially explicit way, facilitating the equitable sharing of financial benefits based on performance.
- Finally, the MMR system will evaluate individual activities and provide valuable information to the ER program, which in turn could refine the ER program's investment strategy and planning. The RE program plans to integrate the MMR system into its overall adaptive management strategy: MMR results will lead to the reinvestment of carbon revenues in the ER-Program for various high-yield emission reduction activities.

The ER program's MMR (sub-national MMR model) has been designed to be harmonized with the ER program's reference level. As such, the MMR system will use a sampling approach that applies the same manual/visual classification rules as those used to calculate the ER-Program's FREL.

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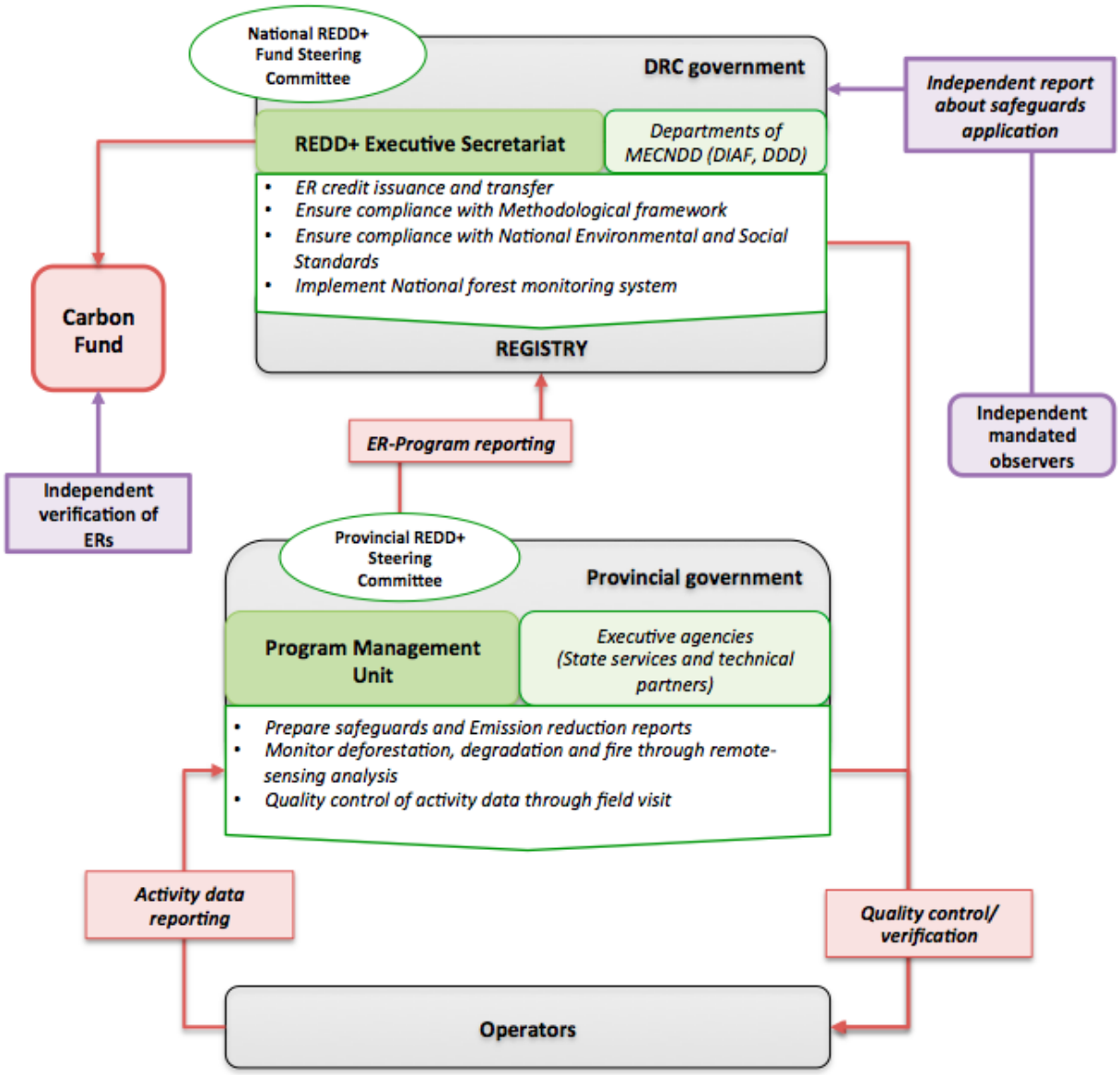

Figure 2-1: Role and responsibilities for monitoring and reporting of carbon and non-carbon performance.

Table 2-2: Relevant Standard Operating Procedures (SOP) and QA/QC procedures

Parameter	Document	Changes introduced in the SOP compared to the description that was provided in the ER-PD.
Activity data	Appendix 1 of Final Report "Quantifying the forest Reference Level of the emissions reduction program of Maï-Ndombe Province, Democratic	The sample-based area estimation of activity data has been updated. Initial FREL was estimated using systematic grids (37,184 samples) with variable spacing between sampling locations (5,000 to 1,600) depending on the stratum. Updated activity data are calculated using pixel-based

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	Republic of Congo - University of Maryland / GLAD Lab"[5]	stratified random sampling with 2,000 sampling points. We estimate activity data using pixel-based stratified random sampling.
Emission Factor	DRC FREL Modified Submission[6] includes a description of methods and procedures applied during data collection: Annex 7 - WWF Carbon Map and Model Project for Forest Biomass LiDAR Mapping by Airborne LiDAR Remote Sensing Annex 9 - Methodology of the National Forest Pre-Inventory.	Initial FREL was estimated based on Carbon stock data developed under the Carbon Map and Model program by a Light Detection and Ranging (LIDAR) flight campaign in the ER program area (LIDAR flights were conducted from June 2014 to October 2014). The mean total biomass per stratum has been updated with a new dataset. AGB and BGB values were updated based on a compilation of three sets of forest inventory data (PRE-INF, DIAF/JICA, and DIAF). Different methods were used to estimate updated values of mean total biomass per stratum (i.e., Root-shoot ratio).

Community engagement

- The participation of local communities in Mai Ndombe has been effective during all phases of the development of the ER-Program, notably through consultations launched by the Environmental Civil Society Group (GTCR) under the operational lead of the NGO Ocean, which deployed its teams in the 8 territories of Mai Ndombe province in 2015
- These consultations resulted in the appointment of three delegates per territory, made up of two members of local communities and/or indigenous peoples as well as a territory CARG coordinator.
- In total, 24 people were designated to participate directly as delegates in all relevant ER-Program activities.
- Since then, these delegates have participated as stakeholders in ERP activities, most importantly in the process of finalizing the Benefit Sharing Plan (BSP). To this end, consultations were held at all levels: national, provincial and local. Prior to the signing of the ERPA, there were several consultations, notably in the context of the BSP between 2014 and 2016, with a consultation workshop on the principles of the BSP in 2017. After the ERPA was signed, 13 consultation workshops with communities and PAs were held between September and November 2019 were conducted by REPALEF and GTCR (See the report on the consultations held with indigenous peoples and local communities in the jurisdictional area of the emission reduction program in the Maindombe in the Democratic Republic of Congo on key aspects of the benefit-sharing plan as part of its finalization, April 2020).
- The BSP was presented to the COPIL on April 21, 2022. It is also important to note that the ERP is part of the capitalization of the achievements of the PIREDD, which succeeded in setting up a CLD at the level of each terroir.

[5] Final report for **Quantifying the forest Reference Level of the emissions reduction program of Maï-Ndombe Province, Democratic Republic of Congo - University of Maryland / GLAD Lab -**can be accessed at the following link**:** https://www.dropbox.com/scl/fi/za913nv2zgh1lizgy32ag/UMD-WB_final_report_EN-last.docx?rlkey=3461sr1idn7tz7byfjw4ojv75&st=jrve8bs4&dl=0

[6] https://redd.unfccc.int/files/rdc_documentnerf_soumissionfinale_29112018.pdf

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- As far as the monitoring report itself is concerned, it is important to stress that local communities were not directly involved in the process of drawing it up. However, they did take part in the last meeting of the PIREDD Mai Ndombe Steering Committee (COPIL) held in Nioki, where the first draft was presented.

- The Program has explored and encourages community participation in monitoring and information sharing when appropriate considering methodological requirements. In accordance with the Methodological Framework, deforestation is mapped and estimated according to the IPCC Approach 3, with centralized processing (DIAF/UMD) ensuring consistency with national data; consequently, activity data (AD) and emission factors (EF) fall under the responsibility of technical entities.
- In parallel, the Program will leverage the participation of PACL for: (i) field verification of change alerts (georeferenced points, photos, standardized forms); (ii) documentation of safeguards and operation of the MGP/FGRM; (iii) local monitoring of the implementation of the PPB/BSP and non-carbon benefits (NCB).
- A community validation protocol (SOP) and a training plan are being developed to integrate these contributions into the national MRV system, with quality control (QA/QC) ensured by the DIAF. This approach meets the requirement to explore and encourage participation "where appropriate."
- It is also worth noting the involvement of communities in the collection of floristic data as part of the National Forest Inventory (NFI) — notably the identification of species in local languages — which has contributed to the production of emission factors used by the Program.

2.2 Updates to the monitoring approach

The monitoring approach has not been updated, therefore this section is not applicable.

2.3 Measurement, monitoring and reporting approach

Table 2.1 describes the set of tools developed by the Democratic Republic of Congo to estimate emissions and removal from deforestation, degradation, and forest regeneration. Also is provided a step-by-step description of the monitoring parameters used to establish the Reference Level and estimate Emissions and Emissions reductions during the Monitoring Period for the Carbon Pools and greenhouse gases selected in the ER-PD. The set of tools for emission and removal estimation can be accessed at the following link:

https://www.dropbox.com/scl/fo/fdmsffpz9ndx0w4wr2ssy/AM90qz70PxLyCr5GgB-H8Ok?rlkey=9izb6249527khff44aymecw3v&st=h0sti2kr&dl=0

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Table 2-3: Step-by-step description of the monitoring parameter and data integration tools to establish the Reference Level and estimate Emissions and Emissions reductions during the Monitoring Period for the Carbon Pools and greenhouse gases selected in the ER-PD.

Monitoring parameters and Data Integration tools	Step	Description of the measurement and monitoring approach
Land use carbon density calculation and uncertainty analysis See tdm/ha values in Monitoring Parameters Table in "ER_Calculation" sheet of DRC_ER_Calculations 2sdERMR_withdata.xlsx[7].	1	The carbon density used to estimate net emissions for the reference and monitoring period is based on a Data compilation of three datasets. In the absence of data from a complete national forest inventory, data from the national forest pre-inventory (**PRE-IFN**), collected for the whole country (except for North Kivu, South- Kivu, and Kongo Central), were supplemented with two other sets of inventory data: i. The inventory carried out by the DIAF within the framework of the DIAF-JICA Forests project (**DIAF-JICA data**) in the former province of Bandundu, and ii. The inventory carried out by the DIAF within the framework of the biomass mapping project supported by the WWF-DRC (**WWF data**) data collected in Tshopo, Maniema, Sankuru, Mongala, Tshuapa, Equateur, and Sud-Ubangi. After analyzing the different data sources, a centralized database was compiled. Data relating to lianas, dead wood, and trees less than 10 cm in diameter at breast height (DBH) were excluded from the centralized database as all forest inventories did not collect them. Biomass estimates were carried out using the **BIOMASS package** (Réjou-Méchain et al., 2017) of the R software (v. 3.2.5). BIOMASS compiles a set of functions allowing, from a classic forest inventory dataset, to (1) correct the taxonomic information, (2) estimate the wood density (WD) of each tree and the associated error, (3) build allometric height models and (4) estimate the aboveground biomass of forest plots and the associated error. A detailed BIOMASS package description is available online in the R software platform (CRAN, https://cran.r-project.org/).
Activity Data estimate and associated uncertainty ***AD_calculationTool_RP rev.xlsx***[8] ***AD_calculationTool_MP2ERMR.xlsx***[9]	2	The visual interpretation of land use for the Reference and Monitoring periods is included in both tools' spreadsheet "LU_interpretation."

[7] https://www.dropbox.com/scl/fi/ffrm2fqiytubz8x6dq3u0/DRC_ER_Calculations-2sdERMR_withdata_corrected.xlsx?rlkey=51b28n7agcho8vfc21v5taixb&st=ln4pe484&dl=0

[8] Activity data estimate tool for the Reference Period can be accessed at the following link: https://www.dropbox.com/scl/fi/fjn4ilw8azf3c08et9kc6/AD_calculationTool_RP_rev.xlsx?rlkey=wmnet94xkpxpufz96y70ozubq&st=qg1awznq&dl=0

[9] Activity data estimate tool for the Monitoring Period can be accessed at the following link: https://www.dropbox.com/scl/fi/k33v4u9diti40x50qiei2/AD_calculationTool_MP2ERMR_Corrected.xlsx?rlkey=99i1pq0lxa8fchj65oohtekgr&st=g23unsgi&dl=0

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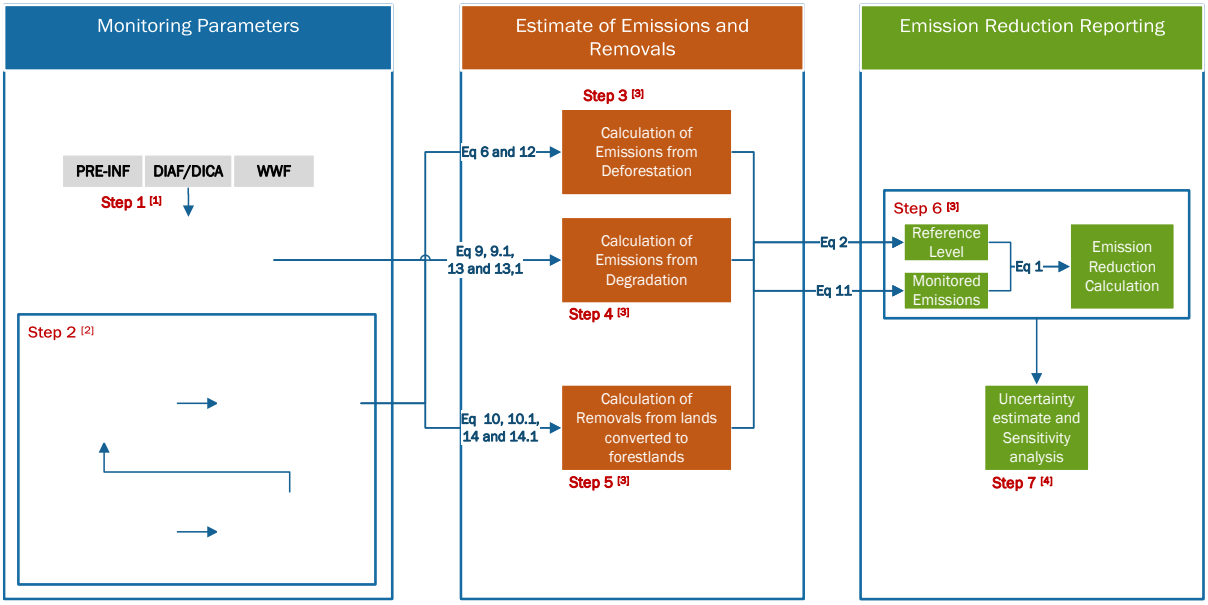
		Activity Data calculation and associated uncertainty for Reference and Monitoring Periods are included in the "AreaCalculation" spreadsheet.
Calculation of emissions and removals ***DRC_ER_Calculations 2sdERMR_withata(1).Xlsx***[10]	3, 4 and 5	Emissions from deforestation and degradation, and new forest removals is calculated with DRC_ER_Calculation tool.
Emission reduction calculation ***DRC_ER_Calculations 2sdERMR_withdata(1).xlsx***	6	Emission Reductions are calculated with DRC_ER_Calculation tool.
Emission reduction uncertainty estimate and sensitivity analysis ***DRC_ER_Calculation 2sdERMR_MC_D.xlsx*** [11] ***Sensivity_DRC_ER_Calculations 2sdERMR_D.xlsx***[12]	7	The Monte Carlo analysis to estimate the global uncertainty of Emission Reduction is made using the DRC ER MC Analysis tool. The Sensitivity Analysis was prepared with the DRC_ER_SensitivityAnalysisRev2.xlsx.

2.3.1 *Line Diagram*

Figure 2-2 shows a line diagram with relevant monitoring points, parameters, and data integration until reporting.



[1] See tdm/ha values in Monitoring Parameters table in "ER_Calculation" sheet of "DRC_ER_Calculation.xlsx"
[2] See activity data estimate for Reference and Monitoring period in "AD_calculationTool_RP.xlsx" and "AD_calculationTool_MP.xlsx".
[3] Emission from deforestation and degradation, new forest removals and Emission Reductions are calculated with "DRC_ER_Calculations.xlsx" tool.
[4] The Monte Carlo analysis to estimate global uncertainty of Ers is made with DRC_ER MC Analysis tool. The Sensitivity Analysis is prepared with the "DRC_ER_SensitivityAnalisys.xlsx".

[10] Calculation of emission and removal tool can be accessed at the following link: https://www.dropbox.com/scl/fi/ffrm2fqiytubz8x6dq3u0/DRC_ER_Calculations-2sdERMR_withdata_corrected.xlsx?rlkey=51b28n7agcho8vfc21v5taixb&st=q9rkv1zl&dl=0

[11] Emission Reduction Uncertainty Estimate tool can be accessed at the following link: https://www.dropbox.com/scl/fi/bq9bzfzemrnis3h7u72nc/DRC_ER_MC_Calculations-2sdERMR_SensitivityAnalysis_21-22.xlsx?rlkey=ve7i9iugryhax6ksu9jhqw043&st=awedo1l0&dl=0

[12] Emission Reduction Sensitivity Analysis tool can be accessed at the following link: https://www.dropbox.com/scl/fi/o4cmn5o0a49jyj7uxi08k/DRC_ER_MC_Calculations-2sdERMR_withdata_21-22.xlsx?rlkey=tmeytl1n79bq1lpqtts50mzpv&st=c7d44sen&dl=0

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Figure 2-2: Line diagram with monitoring parameters, equations, and the integration of data until reporting.

2.3.2 Calculation

>>Example

Emission reduction calculation

$$ER_{ERP,t} = RL_t - GHG_t \quad \textbf{Equation 1}$$

Where:

ER_{ERP}	=	*Emission Reductions under the ER Program in year t; $tCO_2e*year^{-1}$.*
RL_{RP}	=	*Gross Emissions of the RL from deforestation over the Reference Period; $tCO_2e*year^{-1}$. This is sourced from Annex 4 to the ER Monitoring Report and equations are provided below.*
GHG_t	=	*Monitored gross Emissions from deforestation at year t; $tCO_2e*year^{-1}$;*
T	=	*Number of years during the monitoring period; dimensionless.*

Reference Level (RL_t)

The RL estimation may be found in Annex 4, yet a description of the equations is provided below.

Gross Emissions of the RL from deforestation over the Reference Period (RL_{RP}) are estimated as the sum of annual change in total biomass Carbon Stocks (ΔC_{B_t}) during the Reference Period.

$$RL_{RP} = \frac{\sum_t^{RP} \Delta C_{B_t}}{RP} \quad \textbf{Equation 2}$$

Where:

ΔC_{B_t}	=	*Annual change in total biomass Carbon Stocks at year t; $tC*year^{-1}$;*
RP	=	*Reference Period; years.*

Following the 2006 IPCC Guidelines, the annual change in total biomass Carbon Stocks forest land converted to other land-use category (ΔC_{B_t}) would be estimated through the following equation:

$$\Delta C_{B_t} = \Delta C_G + \Delta C_{CONVERSION} - \Delta C_L \quad \textbf{Equation 3}$$

Where:

ΔC_{B_t}	*Annual change of total biomass Carbon Stocks during the period, in tC per year;*
ΔC_G	*Annual increase in Carbon Stocks in biomass due to growth on land converted to another land-use category, in tC per hectare and year;*
$\Delta C_{CONVERSION}$	*Initial change in Carbon Stocks in biomass on land converted to other land-use category, in tC per hectare and year; and*
ΔC_L	*Annual decrease in biomass Carbon Stocks due to losses from harvesting, fuel wood gathering and disturbances on land converted to other land-use category, in tC per hectare and year.*

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document for applying IPCC Guidelines and guidance in the context of REDD+[13], the above equation will be simplified and it will be assumed that:

- *The annual change in total biomass Carbon Stocks (ΔC_B) is equal to the initial change in Carbon Stocks ($\Delta C_{CONVERSION}$);*

Considering equation 2.16 of the 2006 IPCC GL for estimating ($\Delta C_{CONVERSION}$) the change of biomass Carbon Stocks could be expressed with the following equation:

$$\Delta C_{B_t} = \sum_{j,i} \left(B_{Before,j} - B_{After,i}\right) x\, CF\, x \frac{44}{12} \times A(j,i)_{RP} \quad \textbf{Equation 4}$$

Where:

[13] https://www.reddcompass.org/mgd/resources/GFOI-MGD-3.1-en.pdf

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$A(j,i)_{RP}$ *Area converted/transited from forest type j to non-forest type i during the Reference Period, in hectares per year. In this case, three forest land conversions are possible:*

- *(Semi-)deciduous forest to Non-forest type i;*
- *(Semi-)evergreen forest to Non-forest type i; and*
- *Mangrove forest to Non-forest type i.*

Five types of non-forest land are considered:

- *Cropland (C);*
- *Grassland (P);*
- *Wetland (A);*
- *Settlement (U); and*
- *Other lands (O).*

Some of the technical corrections applied pertain this parameter:

- *….*

*The description of this parameter may be found in **Annex 4** – Activity Data and Emission Factors used for calculating the average annual historical Emissions over the Reference Period.*

$B_{Before,j}$ *Total biomass of forest type j before conversion/transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{Before,j}$) and belowground biomass ($BGB_{Before,j}$) and it is defined for each forest type.*

This parameter was technically corrected so as to…..

*Description of this parameter may be found in **Annex 4** - Activity Data and Emission Factors used for calculating the average annual historical Emissions over the Reference Period.*

$B_{After,i}$ *Total biomass of non-forest type i after conversion, in tons dry matter per ha. This is equal to the sum of aboveground ($AGB_{After,i}$) and belowground biomass ($BGB_{After,i}$) and it is defined for each of the five non-forest IPCC Land Use categories.*

This parameter was technically corrected so as to replace the estimates sourced from research by estimates given by the IPCC Guidelines.

*Description of this parameter may be found in **Annex 4** -Activity Data and Emission Factors used for calculating the average annual historical Emissions over the Reference Period.*

CF *Carbon fraction of dry matter in tC per ton dry matter. The value used is:*

- ***0.47** is the default for (sub)tropical forest as per IPCC AFOLU Guidelines 2006, Table 4.3.*

$44/12$ *Conversion of C to CO_2*

Monitored Emissions (GHG_t)

Annual gross GHG Emissions over the monitoring period in the Accounting Area (GHG_t) are estimated as the sum of annual change in total biomass Carbon Stocks (ΔC_{B_t}).

$$GHG_t = \frac{\sum_t^T \Delta C_{B_t}}{T} \qquad \textbf{Equation 5}$$

Where:

ΔC_{B_t} = *Annual change in total biomass Carbon Stocks at year t; tC*year^{-1}*

T = *Number of years during the monitoring period; dimensionless.*

Changes in total biomass Carbon Stocks

*Following the 2006 IPCC Guidelines, the annual change in total biomass Carbon Stocks forest land converted to other land-use category (ΔC_B) would be estimated through **Equation 3** above. Making the same assumptions as described above for the RL the change of biomass Carbon Stocks could be expressed with the following equation:*

$$\Delta C_B = \sum_{j,i} \left(B_{Before,j} - B_{After,i}\right) x\ CF\ x \frac{44}{12} \times A(j,i)_{MP} \qquad \textbf{Equation 6}$$

Where:

$A(j,i)_{MP}$ *Area converted/transited from forest type j to non-forest type i during the Monitoring Period, in hectare per year. In this case, three forest land conversions are possible:*

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- *(Semi-)deciduous forest to Non-forest type i;*
- *(Semi-)evergreen forest to Non-forest type i; and*
- *Mangrove forest to Non-forest type i.*

Five types of non-forest land are considered:

- *Cropland (C);*
- *Grassland (P);*
- *Wetland (A);*
- *Settlement (U); and*
- *Other lands (O).*

*These parameters may be found in **Annex 4** Activity Data and Emission Factors used for calculating the average annual historical Emissions over the Reference Period.*

$B_{Before,j}$ *Total biomass of forest type j before conversion/transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{Before,j}$) and belowground biomass ($BGB_{Before,j}$) and it is defined for each forest type.*
*This was defined ex-ante and is described in **Annex 4** Activity Data and Emission Factors used for calculating the average annual historical Emissions over the Reference Period.*

$B_{After,i}$ *Total biomass of non-forest type i after conversion, in tons dry matter per ha. This is equal to the sum of aboveground ($AGB_{After,i}$) and belowground biomass ($BGB_{After,i}$) and it is defined for each of the five non-forest IPCC Land Use categories.*
This was defined ex-ante and is described in Annex 4 Activity Data and Emission Factors used for calculating the average annual historical Emissions over the Reference Period

CF *Carbon fraction of dry matter in tC per ton dry matter. The value used is:*

- ***0.47** is the default for….*

44/12 *Conversion of C to CO_2*

Equations and parameters used to calculate GHG emissions and removals are listed below. These equations show the steps from the measured input to the aggregation into final reported values.

Emission reduction calculation

$$\mathrm{ER}_{\mathrm{ERP,t}} = \mathrm{RL}_{\mathrm{t}} - \mathrm{GHG}_{\mathrm{t}} \qquad \textbf{Equation 1}$$

Where:

$\mathrm{ER}_{\mathrm{ERP}}$ = Emission Reductions under the ER Program in year t; $tCO_2e*year^{-1}$.
$\mathrm{RL}_{\mathrm{RP}}$ = Gross emissions of the RL over the Reference Period; $tCO_2e*year^{-1}$.
$\mathrm{GHG}_{\mathrm{t}}$ = Monitored gross emissions from deforestation at year t; $tCO_2e*year^{-1}$;
T = Number of years during the monitoring period; dimensionless.

Reference Level (RL_{t})

Net emissions of the RL over the Reference Period ($\mathrm{RL}_{\mathrm{RP}}$) are estimated as the sum of annual change in total biomass carbon stocks ($\Delta \mathrm{C}_{\mathrm{B}_{\mathrm{t}}}$) during the reference period.

$$\mathrm{RL}_{\mathrm{RP}} = \frac{\sum_{\mathrm{t}}^{\mathrm{RP}} \Delta \mathrm{C}_{\mathrm{B}_{\mathrm{t}}}}{\mathrm{RP}} + AE \qquad \textbf{Equation 2}$$

Where:

RP = Reference period; years.
AE = Upward adjustment of emissions tCO_2*year^{-1}. For further details on the quantification of the upward adjustment to the average annual historical emission over the reference period.
$\Delta \mathrm{C}_{\mathrm{B}_{\mathrm{t}}}$ = Annual change in total biomass carbon stocks at year t; tCO_2*year^{-1}; The annual changes in carbon stocks over the reference period in the Accounting Area are equal to the sum of annual change in carbon stocks for each of the $\boldsymbol{i}$ REDD+ activities ($\Delta \boldsymbol{C}_{\boldsymbol{LU}_i}$). Following the IPCC notation, the sum of annual

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change in carbon stocks for each of the $\boldsymbol{i}$ REDD+ activities ($\Delta \boldsymbol{C_{LU_i}}$) would be equal to the annual change in carbon stocks in the aboveground biomass carbon pool ($\Delta \boldsymbol{C_{AB}}$) and the annual change in carbon stocks in belowground biomass carbon pool ($\Delta \boldsymbol{C_{BB}}$) accounted.

$$\Delta \boldsymbol{C_{LU}} = \sum_{i} \Delta \boldsymbol{C_{LU_i}} \qquad \textbf{Equation 3} \text{ (Equation 2.2, 2006 IPCC GL)}$$

$$\Delta \boldsymbol{C_{LU_i}} = \Delta \boldsymbol{C_{AB}} + \Delta \boldsymbol{C_{BB}} = \Delta \boldsymbol{C_B} \qquad \textbf{Equation 4} \text{ (Equation 2.3, 2006 IPCC GL)}$$

Annual change in total biomass carbon stocks forest land converted to another land-use category (ΔC_{B_t})

Following the 2006 IPCC Guidelines, the annual change in total biomass carbon stocks forest land converted to other land-use category (ΔC_{B_t}) would be estimated through the following equation:

$$\Delta C_{B_t} = \Delta C_G + \Delta C_{CONVERSION} - \Delta C_L \qquad \textbf{Equation 5} \text{ (Equation 2.15, 2006 IPCC GL)}$$

Where:

ΔC_{B_t}	=	Annual change in carbon stocks in biomass on land converted to other land-use category, in tones C yr^{-1};
ΔC_G	=	Annual increase in carbon stocks in biomass due to growth on land converted to another land-use category, in tones C yr^{-1};
$\Delta C_{CONVERSION}$	=	Initial change in carbon stocks in biomass on land converted to other land-use category, in tones C yr^{-1}; and
ΔC_L	=	Annual decrease in biomass carbon stocks due to losses from harvesting, fuel wood gathering and disturbances on land converted to other land-use category, in tones C yr^{-1}.

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document[14] for applying IPCC Guidelines and guidance in the context of REDD+, the above equation will be simplified and it will be assumed that: a) the annual change in carbon stocks in biomass ($\Delta \boldsymbol{C_B}$) is equal to the initial change in carbon stocks ($\Delta \boldsymbol{C_{CONVERSION}}$); b) it is assumed that the biomass stocks immediately after conversion is the biomass stocks of the resulting land-use. Therefore, the annual change in carbon stocks would be estimated as follows:

$$\Delta \boldsymbol{C_B} = \Delta \boldsymbol{C_{CONVERSION}}$$

$$\Delta C_{B_t} = \sum_{j,i} \left(B_{Before,j} - B_{After,i}\right) \text{ x } CF \text{ x} \frac{44}{12} \times A(j,i)_{RP} \qquad \textbf{Equation 6} \text{ (Equation 2.16, 2006 IPCC GL)}$$

Where:

$A(j,i)_{RP}$ = Area converted/transited from forest type j to non-forest type i during the Reference Period, in hectares per year. In this case, two forest land conversions are possible:

- Primary forest terra firme to non-forest type i; and
- Secondary forest to non-forest type i

One type of non-forest land is considered:

- Crops and regeneration of abandoned crops (CRCA-Culture et Régénération de Culture Abandonnée).

[14]Page 44, GFOI (2013) Integrating remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative: Pub: Group on Earth Observations, Geneva, Switzerland, 2014.

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Activity data for this report period were calculated using a remote sensing-derived stratified random sampling with sampling points allocated using and optimization approach based on strata proportions [15].

$B_{Before,j}$ = Total biomass of forest type j before conversion/transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{Before,j}$) and belowground biomass ($BGB_{Before,j}$) and it is defined for each forest type.

$B_{After,i}$ = Total biomass of non-forest type i after conversion, in tons dry matter per ha. This is equal to the sum of aboveground ($AGB_{After,i}$) and belowground biomass ($BGB_{After,i}$) and it is defined for each of the non-forest IPCC Land Use categories.

CF = Carbon fraction of dry matter in tC per ton dry matter. The value used is:

- **0.47** is the default for (sub)tropical forest as per IPCC AFOLU guidelines 2006, Table 4.3.

$44/12$ = Conversion of C to CO_2

Annual change in carbon stocks in biomass on forestland remaining forestland ($\Delta \boldsymbol{C_{B_{DEG}}}$)

Following the 2006 IPCC Guidelines the annual change in carbon stocks in biomass on forestland remaining forestland ($\Delta \boldsymbol{C_{B_{DEG}}}$) could be estimated through the Gain-Loss Method or the Stock-Difference Method as described in Chapter 2.3.1.1 of Volume 4 of the 2006 IPCC Guidelines.

$$\Delta \boldsymbol{C_B} = \Delta \boldsymbol{C_G} - \Delta \boldsymbol{C_L} \qquad \textbf{Equation 7} \text{ (Equation 2.7, 2006 IPCC GL)}$$

$$\Delta \boldsymbol{C_B} = \frac{(\boldsymbol{C_{t_2}} - \boldsymbol{C_{t_1}})}{(\boldsymbol{t_2} - \boldsymbol{t_1})} \qquad \textbf{Equation 8} \text{ (Equation 2.8 (a), 2006 IPCC GL)}$$

Where:

$\Delta \boldsymbol{C_B}$ = Annual change in carbon stocks in biomass for each land sub-category, in tones C yr^{-1}

$\Delta \boldsymbol{C_G}$ = annual increase in carbon stocks due to biomass growth for each land sub-category, considering the total area, tones C yr-

$\Delta \boldsymbol{C_L}$ = annual decrease in carbon stocks due to biomass loss for each land sub-category, considering the total area, tones C yr-1

$\boldsymbol{C_{t_2}}$ = total carbon in biomass for each land sub-category at time $\boldsymbol{t_2}$, tonnes C

$\boldsymbol{C_{t_1}}$ = total carbon in biomass for each land sub-category at time $\boldsymbol{t_1}$, tonnes C

Following the recommendations set in chapter 2.2.2 of the GFOI Methods Guidance Document[16] for applying IPCC Guidelines and guidance in the context of REDD+, the above equation will be simplified, and it will be assumed that: a) the annual change in carbon stocks in biomass ($\Delta \boldsymbol{C_B}$) due to degradation is equal to the annual decrease in carbon stocks (b) the decrease in carbon stocks occurs the year of conversion. The long-term decrease in carbon stocks indicated in equation (1) of the GFOI MGD is assumed here to be zero. Therefore, considering the GFOI MGD the IPCC equation for forest degradation could be expressed as an Emission Factor time activity data as follows:

$$\Delta \boldsymbol{C_{B_{DEG}}} = \sum_j \{\boldsymbol{EF_{DEG}} \times \boldsymbol{A}(\boldsymbol{a}, \boldsymbol{b})_{\boldsymbol{RP}}\} \qquad \textbf{Equation 9}$$

[15] The file with 2,000 sampling points location can be accessed at the following link (UMD-WB_final_2000_samples.kml): https://www.dropbox.com/scl/fi/2uryhvgzo7fijz72vhgk4/UMD-WB_final_2000_samples.kml?rlkey=4mzabo9ax5jts66vyg4ythonv&st=e6mib7ss&dl=0

[16] Page 48, GFOI (2013) Integrating remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative: Pub: Group on Earth Observations, Geneva, Switzerland, 2014.

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$\mathbf{EF_{DEG}}$ = Emission factor for degradation of forest type a to forest type b, tones CO2 ha^{-1}. The Emission Factor is calculated with the equation 9.1 where $B_{Beforea,a}$ is total biomass of forest type ***a*** before transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{Before,a}$) and belowground biomass ($BGB_{Before,a}$) and $B_{After,b}$ is total biomass of forest type ***b*** after transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{after,b}$) and belowground biomass ($BGB_{after,b}$). CF is the Carbon fraction of dry matter in tC per ton dry matter. The value used is **0.47** is the default for (sub)tropical forest as per IPCC AFOLU guidelines 2006, Table 4.3. 44/12 is the conversion of C to CO_2.

$$EF_{DEG} = \left(B_{Before,a} - B_{After,b}\right) \times CF \times \frac{44}{12}$$ **Equation 9.1**

$\boldsymbol{A(a,b)_{RP}}$ = Area of forest type a converted to forest type b (transition denoted by a,b) during the Reference Period, ha yr^{-1}.

Annual change in carbon stocks in biomass on non-forestland converted in forestland ($\Delta \boldsymbol{C_{B_{SREG}}}$)

Land converted to forest land CO2 removals has been estimated following the recommendations set in the Guidance Note for accounting of legacy emissions/removals of the FCPF (version 1). Since the FCPF Methodological Framework requires IPCC Tier 2 or higher method, the net annual CO2 removals are calculated using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. These equations were simplified by assuming that the conversion from non-forest to forest occurs during a period from average carbon stocks in non-forest to average carbon stocks in forests. A conservative default period of 20 years is assumed for the forest to grow from the carbon stock levels of non-forest to the level of biomass in the average forest. The removal estimate considers changes in carbon stocks in above- and below-ground biomass. Using the outcome of equation 2.15 and 2.16, it was determined the changes in the total carbon stocks in biomass (removals) during the reference period as the sum of the total carbon stocks in biomass of all land units. From the point of view of notations, the emission factors in equation EQ5 above would be replaced by $\mathbf{RF}_{SREG}$ in enhancement of carbon stocks in new forests.

$$\Delta \boldsymbol{C_{B_{SREG}}} = \sum_{\boldsymbol{LU=1}}^{\boldsymbol{n}} \{\boldsymbol{RF_{SREG}} \times \boldsymbol{A(i,j)_{RP}}\}$$ **Equation 10**

Where:

$\boldsymbol{RF_{SREG}}$ = enhancement of carbon stocks in new forests [tCO2*ha*year^{-1}]. The Removal Factor is calculated with the equation 10.1 where B_{CRCA} is total biomass of crops and regeneration of abandoned crops, in tons of dry matter per ha. This is equal to the sum of aboveground (AGB_{CRCA}) and belowground biomass (BGB_{CRCA}) and $B_{SecondaryForest}$ is total biomass of Secondary Forests, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{SecondaryForest}$) and belowground biomass ($BGB_{SecondaryForest}$). CF is the Carbon fraction of dry matter in tC per ton dry matter. The value used is **0.47** is the default for (sub)tropical forest as per IPCC AFOLU guidelines 2006, Table 4.3. 44/12 is the conversion of C to CO_2.

According to the FCPF guidance note for accounting of legacy emissions/removals[17] and the IPCC guidelines, after a change in land use, it is good practice to assume that the carbon stocks in the relevant area change from one steady value (associated with the land use before the land use change) to another steady value (associated with the land use after the land use change) over at least 20 years with the emissions and removals being spread over the whole

[17] FCPF guidance note for accounting of legacy emissions/removals can be accessed at the following link: https://www.forestcarbonpartnership.org/system/files/documents/fmt_note_2020-5_application_of_ipcc_guidelines_v2_.pdf

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transition period. Therefore, the total biomass gained from abandoned crops to secondary forests was divided by 20 years to estimate the removal factor.

$$RF_{SREG} = \frac{(B_{CRCA} - B_{SecondaryForest}) \text{ x CF x} \frac{44}{12}}{20}$$ **Equation 10.1**

$\boldsymbol{A(i,j)_{RP}}$ = Area of non-forestland *I* converted to forestland *j* (transition denoted by *i,j*) in the reference period, ha yr^{-1}.

LU = Land unit.

Monitored emissions ($\mathbf{GHG_t}$)

Annual gross GHG emissions over the monitoring period in the Accounting Area (GHG_t) are estimated as the sum of annual change in total biomass carbon stocks (ΔC_{B_t}).

$$GHG_t = \frac{\sum_t^T \Delta C_{B_t}}{T}$$ **Equation 11**

Where:

ΔC_{B_t} = Annual change in total biomass carbon stocks at year t; $tC*year^{-1}$

T = Number of years during the monitoring period; dimensionless.

Annual change in total biomass carbon stocks forest land converted to another land-use category (ΔC_{B_t})

Following the 2006 IPCC Guidelines, the annual change in total biomass carbon stocks forest land converted to other land-use category (ΔC_B) would be estimated through **Equation 3** above. Making the same assumptions as described above for the RL the change of biomass carbon stocks could be expressed with the following equation:

$$\Delta C_B = \sum_{j,i} \left(B_{Before,j} - B_{After,i}\right) \text{ x CF x} \frac{44}{12} \times A(j,i)_{MP}$$ **Equation 11**

Where:

$A(j,i)_{MP}$ = Area converted/transited from forest type j to non-forest type i during the Monitoring Period, in hectare per year. In this case, two forest land conversions are possible:

- Primary forest terra firme to non-forest type i; and
- Secondary forest to non-forest type i

One type of non-forest land is considered:

- Crops and regeneration of abandoned crops (CRCA-Culture et Régénération de Culture Abandonnée).

$B_{Before,j}$ = Total biomass of forest type j before conversion/transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{Before,j}$) and belowground biomass ($BGB_{Before,j}$) and it is defined for each forest type.

$B_{AftIr,i}$ = Total biomass of non-forest Iype i after conversion, in tons dry matter per ha. This is equal to the sum of aboveground ($AGB_{After,i}$) and belowground biomass ($BGB_{After,i}$) and it is defined for each of the five non-forest IPCC Land Use categories.

CF = Carbon fraction of dry matter in tC per ton dry matter. The value used is:

- **0.47** is the default for (sub)tropical forest as per IPCC AFOLU guidelines 2006, Table 4.3.

$44/12$ = Conversion of C to CO_2

Annual change in carbon stocks in biomass on forestland remaining forestland ($\Delta C_{B_{DEG}}$)

Annual change in carbon stocks in biomass on forestland remaining forestland ($\Delta C_{B_{DEG}}$) would be estimated through **Equations 7 and 8** above. Making the same assumptions as described above for the RL the change of biomass carbon stocks could be expressed with the following equation:

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$$\Delta C_{B_{DEG}} = \sum_{j} \{EF_{DEG} \times A(a,b)_{MP}\}$$ **Equation 12**

Where:

$\mathbf{EF_{DEG}}$ = Emission factor for degradation of forest type a to forest type b, tones CO2 ha^{-1}. The Emission Factor is calculated with the equation 13.1 where $B_{Beforea,a}$ is total biomass of forest type ***a*** before transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{Before,a}$) and belowground biomass ($BGB_{Before,a}$) and $B_{After,b}$ is total biomass of forest type ***b*** after transition, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{after,b}$) and belowground biomass ($BGB_{after,b}$). CF is the Carbon fraction of dry matter in tC per ton dry matter. The value used is **0.47** is the default for (sub)tropical forest as per IPCC AFOLU guidelines 2006, Table 4.3. 44/12 is the conversion of C to CO_2.

$$EF_{DEG} = \left(B_{Before,a} - B_{After,b}\right) \text{ x CF x} \frac{44}{12}$$ **Equation 13.1**

$\boldsymbol{A(a,b)_{MP}}$ = Area of forest type a converted to forest type b (transition denoted by a,b) during the Monitoring Period, ha yr^{-1}.

Annual change in carbon stocks in biomass on non-forestland converted in forestland ($\Delta C_{B_{SREG}}$)

Annual change in carbon stocks in biomass on forestland remaining forestland ($\Delta C_{B_{DEG}}$) would be estimated through **Equations 7 and 8** above. Making the same assumptions as described above for the RL the change of biomass carbon stocks could be expressed with the following equation:

$$\Delta C_{B_{SREG}} = \sum_{LU=1}^{n} \{RF_{SREG} \times A(i,j)_{MP}\}$$ **Equation 13**

Where:

$\boldsymbol{RF_{SREG}}$ = enhancement of carbon stocks in new forests [tCO2*ha*$year^{-1}$]. The Removal Factor is calculated with the equation 10.1 where B_{CRCA} is total biomass of crops and regeneration of abandoned crops, in tons of dry matter per ha. This is equal to the sum of aboveground (AGB_{CRCA}) and belowground biomass (BGB_{CRCA}) and $B_{SecondaryForest}$ is total biomass of Secondary Forests, in tons of dry matter per ha. This is equal to the sum of aboveground ($AGB_{SecondaryForest}$) and belowground biomass ($BGB_{SecondaryForest}$). CF is the Carbon fraction of dry matter in tC per ton dry matter. The value used is **0.47** is the default for (sub)tropical forest as per IPCC AFOLU guidelines 2006, Table 4.3. 44/12 is the conversion of C to CO_2.

According to the FCPF guidance note for accounting of legacy emissions/removals[18] and the IPCC guidelines, after a change in land use, it is good practice to assume that the carbon stocks in the relevant area change from one steady value (associated with the land use before the land use change) to another steady value (associated with the land use after the land use change) over at least 20 years with the emissions and removals being spread over the whole transition period. Therefore, the total biomass gained from abandoned crops to secondary forests was divided by 20 years to estimate the removal factor.

$$RF_{SREG} = \frac{\left(B_{CRCA} - B_{SecondaryForest}\right) \text{ x CF x} \frac{44}{12}}{20}$$ **Equation 14.1**

[18] FCPF guidance note for accounting of legacy emissions/removals can be accessed at the following link: https://www.forestcarbonpartnership.org/system/files/documents/fmt_note_2020-5_application_of_ipcc_guidelines_v2_.pdf

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$A(j,i)_{MP}$ = Area of non-forest land *i* converted to forestland *j* (transition denoted by *i,j*) in the monitoring period, ha yr^{-1}.

LU = Land unit.

3 DATA AND PARAMETERS

3.1 Fixed Data and Parameters

Below is an overview of the measured or estimated parameters that will not be updated during the Crediting Period. These parameters are linked to the equations provided in section 2.2.2.

Activity data for the reference period[19]

Parameter:	$A(j,i)_{RP}$ *Equation 6* $A(a,b)_{RP}$ *Equation 9* $A(i,j)_{RP}$ *Equation 10*
Description:	$A(j,i)_{RP}$*:* Area converted/transited from forest type j to non-forest type i during the Reference Period (Deforestation transition denoted by j, i) $A(a,b)_{RP}$*:* Area of forest type a converted to forest type b during the Reference Period (Degradation transition denoted by a, b). $A(i,j)_{RP}$*:* Area of non-forestland *i* converted to forestland *j* during the Reference Period (Regeneration transition denoted by i, j)
Data unit:	ha
Source of data or description of the method for developing the data including the spatial level of the data	A probability-based sample of time-series imagery was used as reference data in estimating activity data for the province of Maï-Ndombe , DRC, from 2005 to 2014 for the reference period (including two sub-periods for the 2005-2009, and 2010-2014 intervals), and for the performance period. We employed an approach with a goal of delivering a method that can readily be applied to all provinces in the DRC. Sampling design: A stratified random sampling design based on mapped classes closely aligned with activity data definitions was employed to maximize the efficiency of the sample allocation. An initial sample of 100 samples per stratum was drawn for each of the following classes in Maï-Ndombe province. Based on the target class proportions identified in each stratum from the interpretation of the initial sample, we calculated the number of sampling units per stratum

[19] Further details on the data sources and methods for estimating activity data can be found in the final report for the quantification of the forest reference level of the emission reduction program in the province of Maï-Ndombe, Democratic Republic of Congo - University of Maryland / GLAD Laboratory at_ https://www.dropbox.com/s/flsg2p1hp1ogvpx/UMD-WB_final_report_EN-last.docx?dl=0 .
Please note that the UMD report is not the official data source for the monitoring period activity data estimate, and is merely a preliminary estimate of emissions reduction for 2018-2019. The ER program process is lengthy, and previous decisions on data and periods were subsequently revised, but these revisions are not reflected in the referenced document. The initial reporting period was set from 21.09.2018 to 31.07.2019 (see Appendix 2 on page 15 of the ERPA). However, the reporting period was subsequently modified from 01.01.2019 to 31.12.2020, as described in the MR1. The MR1 document refers to the UMD report to provide further information on the methods used to estimate activity data.

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(local, regional, national, international) :	required to reach the target 90% confidence interval of ± 20% of the estimated area for the reporting classes. The required sample size for a given target variance for each target class can be found using Equation 5.66 from Cochran (page 110) for the optimal allocation with fixed n. Optimal sample allocation among strata (minimized variance for fixed n) was achieved using Equation 5.60 from Cochran (page 108) and replacing the true population class proportion for each stratum with the one estimated from the initial sample. Final sample allocation totaling 2000 sampling units. Response design: The Response design included defining the assessment unit as 30m pixels from the mapped strata population, source reference data in the form of 16-day Landsat composite time-series data from 2000 through 2019, supplemented by Google Earth imagery. A detailed labeling protocol is described exhaustively in Standard Operating Procedures and includes decision trees and LULC classification systems in order to allow the unambiguous classification of the sample units. The sample-based analysis consisted of stratified randomly selected pixels across the area of Maï-Ndombe province. While the sampling unit was a pixel, and each pixel was examined at annual timescales, assessment was also facilitated by spatiotemporal context. Each sampling unit was interpreted using time-series Landsat and Google Earth imagery and time-series of individual spectral measures. Expert image interpreters analyzed the reference sampling units and labeled them at annual intervals as either primary forest, secondary forest, and non-forest, as well as transitions, type of change (loss or gain), driver, and the year of change. For pixels that were not interpreted consistently between the analysts, an additional analyst was engaged, and all analysts worked together to reach a consensus in making final assignments. The interpretation team included participants from the project consortium of DIAF/OSFAC/UMD. Sampling unit interpretation protocol**:** Interpretations of each sampling unit selected for analysis began with a decision tree that provided a dichotomous rule set for assigning labels. The decision tree for assigning land cover is based on physiognomic-structural attributes of vegetation, specifically height and cover. Vegetation cover and height are used to differentiate forests from savanna and non-forest categories, with 30% cover and >3m height defining forests. For tree canopy cover >=60%, we separate dense tree cover into dense humid (primary) terra firma and wetland forests and secondary (regrown) forests. Dense humid forest is differentiated from secondary humid forest by the spectral signature from greater vertical variation and texture associated with old growth forests compared to the more uniform canopies associated with colonizing tree species. Area estimation for activity data: Area estimates were made for three scenarios: 1) consensus labels of all sampling units, 2) only samples where all interpretations agreed, and 3) subsets of sampling units with the same average annual number of observations per epoch, for example where we have at least 5 good annual Landsat observations per sample for all samples. Scenarios 2) and 3) served to evaluate the sensitivity the final consensus estimates to removing samples lacking interpreter consensus or removing samples with few quality image observations. For a stratified random sample of pixels within nine strata, annual binary labels of yes/no for each stable land cover and transition class were assigned. Areas for each class were calculated per the following calculations, given the mean proportion of class $\boldsymbol{i}$ in stratum $\boldsymbol{h}$:

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$$\bar{p}_{ih} = \frac{\sum_{u \in h} p_{iu}}{n_h}$$

Where: p_{iu} = 1 if pixel *u* is identified as class *i*, and 0 otherwise
n_h – number of samples in stratum *h*

Estimated area of class ***i***:

$$\hat{A}_i = \sum_{h=1}^{H} A_h \bar{p}_{ih}$$

Where: A_h – total area of stratum *h*
H – number of strata (*H = 9*)

Standard error of the estimated area of class ***i:***

$$SE(\hat{A}_i) = \sqrt{\sum_{h=1}^{H} A_h^2 \frac{\bar{p}_{ih}(1 - \bar{p}_{ih})}{n_h - 1}}$$

Value applied:

Table 3-1: Value monitored during the Reference Period

Code	Land cover transition	Land cover transition 2005-2009 (ha)	CI 2005-2009 (ha)	Land cover transition 2010-2014 (ha)	CI 2010-2014 (ha)
AUTRE_AUTRE	Stable non-forest	3,543,685	108,864	3,583,473	109,271
AUTRE_FS	Secondary Forest regeneration (forest gain / non-forest to Secondary Forest)	112,734	21,780	126,499	22,330
FDHSH_FDHSH	Stable Dense humid Wetland Forest	2,392,511	289,802	2,392,511	289,802
FHTF_AUTRE	Dense humid terra firma deforestation (DH terra firma to non-forest)	58,501	11,907	96,142	15,014
FHTF_FHTF	Stable Dense humid (DH) Terra firma Forest	5,813,199	299,055	5,625,863	298,453
FHTF_FS	Dense humid terra firma degradation (DH terra firma to secondary forest)	53,562	13,453	91,194	19,227
FS_AUTRE	Secondary Forest deforestation (Secondary Forest to non-forest)	107,786	21,105	273,558	43,992
FS_FS	Stable Secondary Forest	766,342	108,697	659,081	103,217

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QA/QC procedures applied	QA/QC procedures included the definition of clear roles and responsibilities in terms of QA/QC, the definition SOPs[20], training on the defined SOPs, multiple interpreters per sample unit, and a final quality assurance check in order to ensure the quality of the data. All sample pixels were initially interpreted by at least two independent experts. Each analyst assigned to each sample pixel the following labels: loss month and year, pre- and post-disturbance land cover type, land cover proportion, availability of high-resolution image, and forest disturbance driver, and expert's confidence (high/medium/low) separately for all labels. After the initial interpretation, a consensus exercise was performed for all sampled pixels featuring disagreement between interpreters or with low confidence for any interpreter. An additional expert joined the exercise, and a group discussion was undertaken to make the final assignment of land cover extent and change dynamics. Given the final interpretations, we assessed the sensitivity of the method as a function of interpreter agreement and data richness. Interpretations of 2005-2014 for all samples versus the subset of 1405 samples for which the two expert interpreters agreed resulted in similar area estimates with overlapping uncertainties. Area estimates for individual forest dynamics derived from the subset are within 11% of the estimate made using all 2000 samples. Results based on data richness show that restricting sampling units by annual minimum number of observations to 2, 3 and 4 images also produced similar estimates. There were 1,914 samples having at least two observations per year and area estimates of all forest change categories were less than 6% different across categories. For the 1,426 samples with at least three observations per year, all forest area change estimates differed by less than 9%. For the 584 samples with at least 4 observations per year, secondary regrowth differed by 22% and dense humid forest degradation by 14%, and others by less than 9%. The results indicate a robust method not biased by variation in measurements related to interpreter or observation richness. Importantly, all results from all scenarios document the within reference period increase in forest loss.
Uncertainty associated with this parameter:	Uncertainty stems primarily from: i. Errors made in interpretations of Landsat imagery resulting in incorrect landcover change classes. ii. The sampling errors. The presented work sought to improve the accuracy of the existing reference emissions level calculations through a more robust methodology to estimate activity data. Improvements to the method included 1) stratification on activities for which emissions are estimated using maps of forest cover dynamics of Maï-Ndombe province derived from dense time-series Landsat imagery, 2) more intensive use of the Landsat archive as reference data, 3) sensitivity assessment of measurements of reference data as a function of interpreter agreement and data richness. The principal improvement was derived from the stratification that enabled the efficient allocation and interpretation of reference data. Our goal of <20% uncertainty at the 90th percentile confidence interval for activity data from 2005-2014 was achieved using 2,000 samples. The initial FREL had higher uncertainties derived using over 30,000 samples. The methodological efficiency points to the possible extension of the approach to the

[20]SOPs: https://www.dropbox.com/scl/fi/zfi09p8h4qlaoa7elpovy/Proc-dures-Standards-d-Op-ration.docx?rlkey=wn2u3764xr7681ggrjac3xm6k&st=s3vrhxme&dl=0

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	national scale. Concerning the differences in areas, we believe that fewer samples interpreted by a small team of experts following a strict protocol of signal-based identification of forest loss and gain is a more robust approach.
Any comment:	

Emission Factors

Parameter:	$\mathbf{B_{Before,j}}$ **;** Equations 6 and 12 $\mathbf{B_{After,i}}$; Equations 6 and 12 **CF**; Equation 6
Description:	$\mathbf{B_{Before,j}}$: Total biomass of forest type j before conversion/transition. This is equal to the sum of aboveground ($AGB_{Before,j}$) and belowground biomass ($BGB_{Before,j}$) and it is defined for each forest type. $\mathbf{B_{After,i}}$: Total biomass of non-forest type i after conversion. This carbon content is equal to the sum of aboveground ($AGB_{After,i}$) and belowground biomass ($BGB_{After,i}$), and it is defined for each of the non-forest IPCC Land Use categories. **CF**: Carbon fraction of dry matter in tC per ton dry matter. The value used is: **0.47** is the default for (sub)tropical forest as per IPCC AFOLU guidelines 2006, Table 4.3
Data unit:	**Carbon content**: tones of dry matter per ha ($tCO_2\ ha^{-1}$).
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international) :	**Spatial Level**: National **Source of Data**[21]: The carbon density used to estimate net emissions for the reference and monitoring periods is based on a Data compilation of three datasets (see table below). In the absence of data from a complete national forest inventory, data from the national forest pre-inventory (**PRE-IFN**), collected for the whole country (except for North Kivu, South- Kivu, and Kongo Central), were supplemented with two other sets of inventory data: i. The inventory carried out by the DIAF within the framework of the DIAF-JICA Forests project (**DIAF-JICA data**) in the former province of Bandundu, and ii. The inventory carried out by the DIAF within the framework of the biomass mapping project supported by the WWF-DRC (**WWF data**) data collected in Tshopo, Maniema, Sankuru, Mongala, Tshuapa, Equateur, and Sud-Ubangi. Table 3-2: Inventoried areas and number of sampling units by land use class. Acronyms of land cover classes: FDHSH (dense humid wetland forest on hydromorphic soil), FDHTF (dense humid forest on terra firma), FSFC (dry forest or clear forest), FSc (secondary forest), CRCA (Crops and regeneration of abandoned crops).

Land cover class	Inventoried area (ha)	SU type				Total
		WWF (square cluster)	PRE-IFN (square plot)	DIAF-JICA (square cluster)	PRE-IFN & DIAF-JICA (circular cluster)	
FDHTF	46.1	7	13	13	15	48
FDHSH	7.56			6		6

[21] Further details on source data and methods to estimate land-use carbon densities can be found in the modified submission of the Forest Reference Emission Levels for Reducing Emissions From Deforestation in The Democratic Republic Of Congo (https://redd.unfccc.int/files/rdc_documentnerf_soumissionfinale_29112018.pdf)

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FSFC	6.29				11	11
FSc	3.32				14	14
Savannah	8.48				29	29
CRCA	3.46				14	14

Methods for developing the data:

After analyzing the different data sources, a centralized database was compiled. Data relating to lianas, dead wood, and trees less than 10 cm in diameter at breast height (DBH) were excluded from the centralized database as all forest inventories did not collect them.

Wood Density: The wood densities (WD) of the trees in the plots are taken from a table grouping the wood densities from the following references: (i) the "Global Wood Density database" (Chave et al., 2005; Chave et al ., 2009), (ii) density data from the DIAF (Management inventory standards, SPIAF 2007), (iii) the ITTO table (2006), (iv) the IPCC table (2006) and (v) the ICRAF table (2013). Only data from tropical Africa are considered in the Global Wood Density database.

Estimation of tree heights: For trees whose height (H, in m) has not been measured in the field, an allometric height model (H: DBH) is used. This is a 3-parameter Weibull model, frequently used in international scientific publications (e.g., Feldpausch et al., 2012).

AGB estimation: Biomass estimates were carried out using the **BIOMASS package** (Réjou-Méchain et al., 2017) of the R software (v. 3.2.5). BIOMASS compiles a set of functions allowing, from a classic forest inventory dataset, to (1) correct the taxonomic information, (2) estimate the wood density (WD) of each tree and the associated error, (3) build allometric height models and (4) estimate the aboveground biomass of forest plots and the associated error. A detailed BIOMASS package description is available online in the R software platform (CRAN, https://cran.r-project.org/).The aboveground biomass of a tree is estimated indirectly using an AGB model. If the diameter at breast height (DBH) of the tree is the most important predictor variable, AGB models that also include wood density (DB) and height (H) of the tree generally perform better. (Chave et al., 2005). Indeed, the relationship between DHP and AGB varies according to species (through DB, in particular) and environmental conditions, the latter influencing the H: DHP relationship. In the absence of a national or regional AGB model, the pantropical model of Chave et al. (2014) was used –

$$\mathrm{AGB} = 0.0673 * (\mathrm{DB} * \mathrm{DHP}^2 * \mathrm{H})^{0.976}$$

Mean AGB by Land-use type: The mean AGB by Land-use type and associated confidence intervals are estimated via random sampling with a replacement procedure. Let X_i be the estimate of the AGB of an LU_i, obtained by summing the AGB of the trees of the LU_i and Y_i its area. The average biomass can be calculated using the ratio of means method (Zarnoch and Bechtold, 2000):

$$\mathrm{AGB}_i = \frac{\sum_{i=1}^{n_s} X_i}{\sum_{i=1}^{n_s} Y_i}$$

The aboveground biomass considers only trees whose DBH is ≥ 10 cm. To incorporate small-diameter trees (i.e., DBH < 10 cm), a correction factor was applied to AGB ≥ 10 cm according to the formula below:

$$\mathrm{AGB}_{1\mathrm{cm}} = 1.872(\mathrm{AGB}_{10\mathrm{cm}})^{0.906}$$

Belowground Biomass Estimation: Belowground biomass (BGB) was estimated using a root-shoot ratio (RSR), considering AGB_{1cm} as the leaf part. For the classes (i) dry forest/open forest (miombo) and (ii) savannah, the RSR used is 0.2021, corresponding to the ecological zone of tropical moist deciduous forest (Mokany et al. quoted in IPCC 2006). For the classes (i) dense humid forest on terra firma, (ii) dense humid forest on hydromorphic soil, (iii) secondary forest, and (iv) cultivation and regeneration of abandoned cultivation, the RSR used is 0.3720, corresponding to the rainforest ecological zone (*Fittkau and Klinge, 1973* et al. cited in IPCC 2006). It should be noted that the crop and abandoned crop regeneration class can be found in

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<table>
<tr><td></td><td>both ecological zones, dense tropical forests, and tropical moist deciduous forests. The RSR of 0.37 was used for this class in the two ecological zones to simplify and keep a conservative spirit.</td></tr>
<tr><td>Value applied:</td><td>Table 3-1: Estimation of biomass values by forest type and non-forest land use.
<table>
<tr><th>Land use</th><th>Label</th><th>Value (tdm/ha)</th><th>IC (tdm/ha)</th><th>Value (tCO2/ha)</th><th>IC (tCO2/ha)</th></tr>
<tr><td>FSc</td><td>Secondary Forest</td><td>236.71</td><td>58.3</td><td>407.93</td><td>100.47</td></tr>
<tr><td>FDHTF</td><td>Primary forest terra firme</td><td>432.3</td><td>20.0</td><td>745.0</td><td>34.47</td></tr>
<tr><td>FDHSH</td><td>Dense humid wetland forest</td><td>415.48</td><td>44.45</td><td>716.01</td><td>76.6</td></tr>
<tr><td>CRCA</td><td>Culture and Regeneration of Abandoned Culture</td><td>32.9</td><td>5.61</td><td>56.7</td><td>9.67</td></tr>
</table></td></tr>
<tr><td>QA/QC procedures applied</td><td>DRC FREL Modified Submission[22] includes a description of methods and procedures applied during data collection:
Annex 7 – WWF Carbon Map and Model Project for Forest Biomass LiDAR Mapping by Airborne LiDAR Remote Sensing
Annex 9 – Methodology of the National Forest Pre-Inventory.</td></tr>
<tr><td>Uncertainty associated with this parameter:</td><td>Uncertainty sources: AGB of the trees listed in the inventory plots was calculated to estimate the average AGB by land cover classes. Tree AGB estimation is subject to several sources of error, including:
-The error in measuring diameters and heights and potential errors in encoding inventory data. This source of error was not considered in estimating the error on the average AGB10cm. Nevertheless, to reduce this type of error, data cleaning was performed for diameter and height values (outliers were removed);
- The bias of using an average wood density for several species. This source of error was taken into account in the estimation of the error on the average AGB_{10cm};
-The H: DBH model error to which tree height predictions are subject. This source of error was taken into account in the estimation of the error on the average AGB_{10cm};
-The AGB model error to which tree AGB predictions are subject. This source of error was considered in estimating the error on the average AGB_{10cm}.
Also, average AGB_{10cm} estimates based on inventory plots are subject to a potentially significant sampling error. The latter was considered in estimating the error on the average AGB_{10cm}. The Sus retained for estimating biomass values come from different inventories with independent sampling plans and therefore do not respect strictly random samples. It should indeed be emphasized that a large proportion of Sus come from the former province of Bandundu (southwest of the country) and that they are therefore not representative of the whole of the DRC. However, it should be noted that the former province of Bandundu presents all the land cover classes encountered across the DRC.
Total Biomass error propagation: Errors and their propagation were estimated using the “BIOMASS package” of the R software (Réjou-Méchain et al., 2017):
-For tree AGB estimation, 1,000 AGB predictions are made for each tree. Each iteration incorporates a randomly drawn error in the distributions of the following error sources: (i) WD error, (ii) allometric height model error, and (iii) allometric biomass model error (see Réjou-Méchain et al., 2017).</td></tr>
</table>

[22] https://redd.unfccc.int/files/rdc_documentnerf_soumissionfinale_29112018.pdf

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	-For the estimation of the average AGB10cm: for each class, 1e+6 AGB estimates were made by (i) randomly selecting an AGB estimate for each tree among the 1,000 available estimates and (ii) randomly sampling with replacement ns SOS in the stratum. The mean biomass of stratum s and the associated confidence interval are obtained by taking the mean and the 5 and 95 quantiles of the vector of the 1e+6 estimates, respectively. The widest bound estimated with Monte Carlo analysis was used. The Monte Carlo procedure produces asymmetrical confidence intervals ained (IPCC, 2006). Assuming that the errors on AGB_{1cm} and BGB are independent and random, the error on the total biomass B is estimated by following the classic rule of error propagation in the case of a sum of uncertain quantities: $$E_B = \sqrt{E_{AGB_{1cm}}^2 + E_{BGB}^2}$$ Where E_B is the Total Biomass error (in tms*ha^{-1}), $E_{AGB_{1cm}}$ is the error on the quantity AGB_{1cm} (in tms*ha^{-1}), and E_{BGB} the error on the quantity of BGB (in tms*ha^{-1}). The confidence intervals presented in Table 3-2 incorporate the various sources of error shown above and sampling error.
Any comment:	

Parameter:	$\mathbf{EF_{DEG}}$ Equations 9 and 13
Description:	$\mathbf{EF_{DEG}}$: Emission factor for degradation of forest type a to forest type b, tones CO2 ha^{-1}.
Data unit:	**Emission Factor**: tones of dry matter per ha (tCO_2 ha^{-1}).
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	**Spatial Level**: National **Source of Data**[23]: The carbon density used to estimate net emissions for the reference and monitoring periods is based on a Data compilation of three datasets (see table below). In the absence of data from a complete national forest inventory, data from the national forest pre-inventory (**PRE-IFN**), collected for the whole country (except for North Kivu, South- Kivu, and Kongo Central), were supplemented with two other sets of inventory data: i. The inventory carried out by the DIAF within the framework of the DIAF-JICA Forests project (**DIAF-JICA data**) in the former province of Bandundu, and ii. The inventory carried out by the DIAF within the framework of the biomass mapping project supported by the WWF-DRC (**WWF data**) data collected in Tshopo, Maniema, Sankuru, Mongala, Tshuapa, Equateur, and Sud-Ubangi. Table 3-4: Inventoried areas and number of sampling units by land use class. Acronyms of land cover classes: FDHSH (dense humid wetland forest on hydromorphic soil), FDHTF (dense humid forest on terra firma), FSFC (dry forest or clear forest), FSc (secondary forest), CRCA (Crops and regeneration of abandoned crops).

		SU type	Total

[23] Further details on source data and methods to estimate land-use carbon densities can be found in the modified submission of the Forest Reference Emission Levels for Reducing Emissions From Deforestation in The Democratic Republic Of Congo (https://redd.unfccc.int/files/rdc_documentnerf_soumissionfinale_29112018.pdf)

Land cover class	Inventoried area (ha)	WWF (square cluster)	PRE-IFN (square plot)	DIAF-JICA (square cluster)	PRE-IFN & DIAF-JICA (circular cluster)	
FDHTF	46.1	7	13	13	15	48
FDHSH	7.56			6		6
FSFC	6.29				11	11
FSc	3.32				14	14
Savannah	8.48				29	29
CRCA	3.46				14	14

Methods for developing the data:

After analyzing the different data sources, a centralized database was compiled. Data relating to lianas, dead wood, and trees less than 10 cm in diameter at breast height (DBH) were excluded from the centralized database as all forest inventories did not collect them.

Wood Density: The wood densities (WD) of the trees in the plots are taken from a table grouping the wood densities from the following references: (i) the "Global Wood Density database" (Chave et al., 2005; Chave et al ., 2009), (ii) density data from the DIAF (Management inventory standards, SPIAF 2007), (iii) the ITTO table (2006), (iv) the IPCC table (2006) and (v) the ICRAF table (2013). Only data from tropical Africa are considered in the Global Wood Density database.

Estimation of tree heights: For trees whose height (H, in m) has not been measured in the field, an allometric height model (H: DBH) is used. This is a 3-parameter Weibull model, frequently used in international scientific publications (e.g., Feldpausch et al., 2012).

AGB estimation: Biomass estimates were carried out using the **BIOMASS package** (Réjou-Méchain et al., 2017) of the R software (v. 3.2.5). BIOMASS compiles a set of functions allowing, from a classic forest inventory dataset, to (1) correct the taxonomic information, (2) estimate the wood density (WD) of each tree and the associated error, (3) build allometric height models and (4) estimate the aboveground biomass of forest plots and the associated error. A detailed BIOMASS package description is available online in the R software platform (CRAN, https://cran.r-project.org/).The aboveground biomass of a tree is estimated indirectly using an AGB model. If the diameter at breast height (DBH) of the tree is the most important predictor variable, AGB models that also include wood density (DB) and height (H) of the tree generally perform better. (Chave et al., 2005). Indeed, the relationship between DHP and AGB varies according to species (through DB, in particular) and environmental conditions, the latter influencing the H: DHP relationship. In the absence of a national or regional AGB model, the pantropical model of Chave et al. (2014) was used –

$$AGB = 0.0673 * (DB * DHP^2 * H)^{0.976}$$

Mean AGB by Land-use type: The mean AGB by Land-use type and associated confidence intervals are estimated via random sampling with a replacement procedure. Let X_i be the estimate of the AGB of an LU_i, obtained by summing the AGB of the trees of the LU_i and Y_i its area. The average biomass can be calculated using the ratio of means method (Zarnoch and Bechtold, 2000):

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The aboveground biomass considers only trees whose DBH is ≥ 10 cm. To incorporate small-diameter trees (i.e., DBH < 10 cm), a correction factor was applied to AGB ≥ 10 cm according to the formula below:

$$\mathrm{AGB_{1cm}} = 1.872(\mathrm{AGB_{10cm}})^{0.906}$$

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<table>
<tr><td></td><td>Belowground Biomass Estimation: Belowground biomass (BGB) was estimated using a root-shoot ratio (RSR), considering AGB_{1cm} as the leaf part. For the classes (i) dry forest/open forest (miombo) and (ii) savannah, the RSR used is 0.2021, corresponding to the ecological zone of tropical moist deciduous forest (Mokany et al. quoted in IPCC 2006). For the classes (i) dense humid forest on terra firma, (ii) dense humid forest on hydromorphic soil, (iii) secondary forest, and (iv) cultivation and regeneration of abandoned cultivation, the RSR used is 0.3720, corresponding to the rainforest ecological zone (Fittkau and Klinge, 1973 et al. cited in IPCC 2006). It should be noted that the crop and abandoned crop regeneration class can be found in both ecological zones, dense tropical forests, and tropical moist deciduous forests. The RSR of 0.37 was used for this class in the two ecological zones to simplify and keep a conservative spirit.</td></tr>
<tr><td>Value applied:</td><td>Table 3-5: Estimation of Degradation Emission Factor.
<table><tr><th>Emission Factor</th><th>Label</th><th>Value [tCO2/ha]</th><th>IC[1]</th></tr><tr><td>EF Degradation</td><td>Transition from primary terra firme forest to secondary forest)</td><td>337.07</td><td>106.22</td></tr></table>[1] For illustrative purposes, Eq 3.2 Vol 1, Chapter 3 IPCC 2006 Guidelines were used to calculate IC. Uncertainty propagation in Monte Carlo analyses is based on carbon densities' uncertainties.</td></tr>
<tr><td>QA/QC procedures applied</td><td>DRC FREL Modified Submission[24] includes a description of methods and procedures applied during data collection:
Annex 7 – WWF Carbon Map and Model Project for Forest Biomass LiDAR Mapping by Airborne LiDAR Remote Sensing
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<tr><td>Uncertainty associated with this parameter:</td><td>Uncertainty sources: AGB of the trees listed in the inventory plots was calculated to estimate the average AGB by land cover classes. Tree AGB estimation is subject to several sources of error, including:
-The error in measuring diameters and heights and potential errors in encoding inventory data. This source of error was not considered in estimating the error on the average AGB10cm. Nevertheless, to reduce this type of error, data cleaning was performed for diameter and height values (outliers were removed);
- The bias of using an average wood density for several species. This source of error was taken into account in the estimation of the error on the average AGB_{10cm};
-The H: DBH model error to which tree height predictions are subject. This source of error was taken into account in the estimation of the error on the average AGB_{10cm};
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	Total Biomass error propagation: Errors and their propagation were estimated using the "BIOMASS package" of the R software (Réjou-Méchain et al., 2017): -For tree AGB estimation, 1,000 AGB predictions are made for each tree. Each iteration incorporates a randomly drawn error in the distributions of the following error sources: (i) WD error, (ii) allometric height model error, and (iii) allometric biomass model error (see Réjou-Méchain et al., 2017). -For the estimation of the average AGB10cm: for each class, 1e+6 AGB estimates were made by (i) randomly selecting an AGB estimate for each tree among the 1,000 available estimates and (ii) randomly sampling with replacement ns SOS in the stratum. The mean biomass of stratum s and the associated confidence interval are obtained by taking the mean and the 5 and 95 quantiles of the vector of the 1e+6 estimates, respectively. The widest bound estimated with Monte Carlo analysis was used. The Monte Carlo procedure produces asymmetrical confidence intervals ained (IPCC, 2006). Assuming that the errors on AGB_{1cm} and BGB are independent and random, the error on the total biomass B is estimated by following the classic rule of error propagation in the case of a sum of uncertain quantities: $$E_B = \sqrt{E_{AGB_{1cm}}^2 + E_{BGB}^2}$$ Where E_B is the Total Biomass error (in tms*ha^{-1}), $E_{AGB_{1cm}}$ is the error on the quantity AGB_{1cm} (in tms*ha^{-1}), and E_{BGB} the error on the quantity of BGB (in tms*ha^{-1}). The confidence intervals presented in Table 3-2 incorporate the various sources of error shown above and sampling error.
Any comment:	Initial FREL was estimated based on Carbon stock data developed under the Carbon Map and Model program by a Light Detection and Ranging (LIDAR) flight campaign in the ER program area (LIDAR flights were conducted from June 2014 to October 2014). AGB and BGB values were updated based on the three datasets compilation of forest inventory data (PRE-INF, DIAF/JICA, and DIAF).

Parameter:	RF_{SREG} Equations 10 and 14
Description:	RF_{SREG}**:** Enhancement of carbon stocks in new forests. The removal factor is estimated by dividing the Emission Factor of Secondary Forest by 20 years.
Data unit:	**Removal Factor**: tCO2 ha year^{-1}.
Source of data or description of the method for developing the data including the	**Spatial Level**: National **Source of Data**[25]: The carbon density used to estimate net emissions for the reference and monitoring periods is based on a Data compilation of three datasets (see table below). In the absence of data from a complete national forest inventory, data from the national forest pre-inventory (**PRE-IFN**), collected for the whole country (except for North Kivu, South- Kivu, and Kongo Central), were supplemented with two other sets of inventory data: i. The inventory carried out by the DIAF within the framework of the DIAF-JICA Forests project (**DIAF-JICA data**)

[25] Further details on source data and methods to estimate land-use carbon densities can be found in the modified submission of the Forest Reference Emission Levels for Reducing Emissions From Deforestation in The Democratic Republic Of Congo (https://redd.unfccc.int/files/rdc_documentnerf_soumissionfinale_29112018.pdf)

spatial level of the data (local, regional, national, international):	in the former province of Bandundu, and ii. The inventory carried out by the DIAF within the framework of the biomass mapping project supported by the WWF-DRC (**WWF data**) data collected in Tshopo, Maniema, Sankuru, Mongala, Tshuapa, Equateur, and Sud-Ubangi.

Table 3-6: Inventoried areas and number of sampling units by land use class. Acronyms of land cover classes: FDHSH (dense humid wetland forest on hydromorphic soil), FDHTF (dense humid forest on terra firma), FSFC (dry forest or clear forest), FSc (secondary forest), CRCA (Crops and regeneration of abandoned crops).

Land cover class	Inventoried area (ha)	SU type				Total
		WWF (square cluster)	PRE-IFN (square plot)	DIAF-JICA (square cluster)	PRE-IFN & DIAF-JICA (circular cluster)	
FDHTF	46.1	7	13	13	15	48
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FSFC	6.29				11	11
FSc	3.32				14	14
Savannah	8.48				29	29
CRCA	3.46				14	14

Methods for developing the data:

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Wood Density: The wood densities (WD) of the trees in the plots are taken from a table grouping the wood densities from the following references: (i) the "Global Wood Density database" (Chave et al., 2005; Chave et al ., 2009), (ii) density data from the DIAF (Management inventory standards, SPIAF 2007), (iii) the ITTO table (2006), (iv) the IPCC table (2006) and (v) the ICRAF table (2013). Only data from tropical Africa are considered in the Global Wood Density database.

Estimation of tree heights: For trees whose height (H, in m) has not been measured in the field, an allometric height model (H: DBH) is used. This is a 3-parameter Weibull model, frequently used in international scientific publications (e.g., Feldpausch et al., 2012).

AGB estimation: Biomass estimates were carried out using the **BIOMASS package** (Réjou-Méchain et al., 2017) of the R software (v. 3.2.5). BIOMASS compiles a set of functions allowing, from a classic forest inventory dataset, to (1) correct the taxonomic information, (2) estimate the wood density (WD) of each tree and the associated error, (3) build allometric height models and (4) estimate the aboveground biomass of forest plots and the associated error. A detailed BIOMASS package description is available online in the R software platform (CRAN, https://cran.r-project.org/).The aboveground biomass of a tree is estimated indirectly using an AGB model. If the diameter at breast height (DBH) of the tree is the most important predictor variable, AGB models that also include wood density (DB) and height (H) of the tree generally perform better. (Chave et al., 2005). Indeed, the relationship between DHP and AGB varies according to species (through DB, in particular) and environmental conditions, the latter influencing the H: DHP relationship. In the absence of a national or regional AGB model, the pantropical model of Chave et al. (2014) was used –

$$\mathrm{AGB} = 0.0673 * (\mathrm{DB} * \mathrm{DHP}^2 * \mathrm{H})^{0.976}$$

Mean AGB by Land-use type: The mean AGB by Land-use type and associated confidence intervals are estimated via random sampling with a replacement procedure. Let X_i be the estimate of the AGB of an LU_i, obtained by summing the AGB of the trees of the LU_i and Y_i its

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area. The average biomass can be calculated using the ratio of means method (Zarnoch and Bechtold, 2000):

$$AGB_i = \frac{\sum_{i=1}^{n_s} X_i}{\sum_{i=1}^{n_s} Y_i}$$

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$$AGB_{1cm} = 1.872(AGB_{10cm})^{0.906}$$

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Value applied:

Table 3-7: Estimation of removal rate.

FSc Total Biomass ± 90% IC (tmd*ha^{-1})	CRCA Total Biomass ± 90% IC (tmd*ha^{-1})	Removal Factor (tCO^2/ha/year) [1]
236,71±58,3	32.90±56.1	-17.56

[1] Uncertainty of the removal factor is propagated in the Monte Carlo Analysis based on carbon densities' uncertainties of Secondary Forest and CRCA.

QA/QC procedures applied

DRC FREL Modified Submission[26] includes a description of methods and procedures applied during data collection:
Annex 7 – WWF Carbon Map and Model Project for Forest Biomass LiDAR Mapping by Airborne LiDAR Remote Sensing
Annex 9 – Methodology of the National Forest Pre-Inventory.

Uncertainty associated with this parameter:

Uncertainty sources: AGB of the trees listed in the inventory plots was calculated to estimate the average AGB by land cover classes. Tree AGB estimation is subject to several sources of error, including:
-The error in measuring diameters and heights and potential errors in encoding inventory data. This source of error was not considered in estimating the error on the average AGB10cm. Nevertheless, to reduce this type of error, data cleaning was performed for diameter and height values (outliers were removed);
- The bias of using an average wood density for several species. This source of error was taken into account in the estimation of the error on the average AGB_{10cm};
-The H: DBH model error to which tree height predictions are subject. This source of error was taken into account in the estimation of the error on the average AGB_{10cm};

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	-The AGB model error to which tree AGB predictions are subject. This source of error was considered in estimating the error on the average AGB_{10cm}. Also, average AGB_{10cm} estimates based on inventory plots are subject to a potentially significant sampling error. The latter was considered in estimating the error on the average AGB_{10cm}. The Sus retained for estimating biomass values come from different inventories with independent sampling plans and therefore do not respect strictly random samples. It should indeed be emphasized that a large proportion of Sus come from the former province of Bandundu (southwest of the country) and that they are therefore not representative of the whole of the DRC. However, it should be noted that the former province of Bandundu presents all the land cover classes encountered across the DRC. **Total Biomass error propagation**: Errors and their propagation were estimated using the "BIOMASS package" of the R software (Réjou-Méchain et al., 2017): -For tree AGB estimation, 1,000 AGB predictions are made for each tree. Each iteration incorporates a randomly drawn error in the distributions of the following error sources: (i) WD error, (ii) allometric height model error, and (iii) allometric biomass model error (see Réjou-Méchain et al., 2017). -For the estimation of the average AGB10cm: for each class, 1e+6 AGB estimates were made by (i) randomly selecting an AGB estimate for each tree among the 1,000 available estimates and (ii) randomly sampling with replacement ns SOS in the stratum. The mean biomass of stratum s and the associated confidence interval are obtained by taking the mean and the 5 and 95 quantiles of the vector of the 1e+6 estimates, respectively. The widest bound estimated with Monte Carlo analysis was used. The Monte Carlo procedure produces asymmetrical confidence intervals ained (IPCC, 2006). Assuming that the errors on AGB_{1cm} and BGB are independent and random, the error on the total biomass B is estimated by following the classic rule of error propagation in the case of a sum of uncertain quantities: $$E_B = \sqrt{E_{AGB_{1cm}}^2 + E_{BGB}^2}$$ Where E_B is the Total Biomass error (in tms*ha^{-1}), $E_{AGB_{1cm}}$ is the error on the quantity AGB_{1cm} (in tms*ha^{-1}), and E_{BGB} the error on the quantity of BGB (in tms*ha^{-1}). The confidence intervals presented in Table 3-2 incorporate the various sources of error shown above and sampling error.
Any comment:	

3.2 Monitored Data and Parameters

Parameter:	$A(j,i)_{MP}$ Equation 12 $A(a,b)_{MP}$ Equation 13 $A(i,j)_{MP}$ Equation 14
Description:	$A(j,i)_{MP}$: Area converted/transited from forest type j to non-forest type i during the Monitoring Period (Deforestation transition denoted by j, i) $A(a,b)_{MP}$: Area of forest type a converted to forest type b during the Monitoring Period (Degradation transition denoted by a, b).

	$A(i,j)_{MP}$: Area of non-forestland i converted to forestland j during the Monitoring Period (Regeneration transition denoted by i, j)
Data unit:	hectare.
Value monitored during this Monitoring / Reporting Period:	**Table 3-8: Value monitored during 2021-2022 Monitoring Period**

Parameter	Land cover transition	Land cover transition 2021-2022 (ha)	CI
$A(i,j)_{MP:}$	**Secondary regeneration 2021-2022**	64,101	17,859
$A(j,i)_{MP:}$	**Dense humid Wetland Forest deforestation 2021-2022**	646	613
	Dense humid Terra firma deforestation 2021-2022	23,072	4,040
	Secondary Forest deforestation 2021-2022	109,367	18,358
$A(a,b)_{MP:}$	**Dense humid terra firme degradation 2021-2022**	21,182	5,422

Source of data and description of measurement /calculation methods and procedures applied[27]:

Landsat images from January 2013 to February 2023 were used to map the ER-Program area, and these maps were then used to allocate a stratified random sample for probabilistic analysis of baseline data from Landsat, Google Earth and Planet time series. The stratification layer was updated by generating spectral categories using the Mahalanobis approach combined with the layers used for the FREL and MR1 to maintain consistency and comparability of estimates with this monitoring period. The interpreted baseline data were used to calculate activity data for forest change with an uncertainty target of ±20% at the 90 percent confidence interval per activity class, using stratified pixel-based random sampling, a target achieved by using 1308 baseline sample units for all activities except forest degradation. Mahalanobis distances were calculated for stable primary forest pixels up to 2020 for the period 2013-2020 and up to 2022 for the period 2021-2022. Thresholds were interpreted by experts to identify strata targeting dense rainforest loss, secondary forest loss and degradation. Sample iterations targeting sources of high uncertainty resulted in additional sub-strata. The initial stratification comprised 14 strata and the final stratification 23.

Table 3-9: initial samples allocation (NOTE: The Strata file has a "0" class that refers to the background arear not part of the program area).

Strata ID	Strata	Stratum pixel count (Nh)	Initially sampled pixels (nh)
1	dense humid	69172678	30

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2	low	1380570	50
3	med	422766	50
4	high	373046	50
5	second	5645387	30
6	low	2038919	50
7	high	1390592	50
8	wet forest	36704763	30
9	loss	49362	50
10	non-forest	37975974	30
11	water	5102224	30
12	gain	1133899	50
13	count<5	185646	30
14	fallow	5627733	50

An improved sample allocation based on initial stratum performance resulted in the inclusion of 728 additional sample units (Table 3-9). During this optimization, we focused our strategy on those strata that contributed significantly to the initial uncertainty of the estimates for the dynamic classes, leaving some strata unchanged.

The sample size required for a given target variance for each target class can be found using Cochran's equation 5.66 (page 110) for the optimal allocation with fixed n. The optimal sample allocation between strata (minimized variance for fixed n) is obtained by using Cochran's equation 5.60 (page 108) and replacing the true population class proportion for each stratum with that estimated from the initial sample. The final sample distribution totals 1308 sampling units.

Table 3-10: final samples allocation

Strata ID	Strata	Stratum pixel count (Nh)	Final sampling unit allocation (nh)
1	dense humid	68035455	29
2	low	1157628	40
3	med	237565	28
4	high	109648	15
5	second	5645387	200
6	low	1926690	100
7	high	1156319	45
8	wet forest	36564285	30
9	loss	49362	50
10	non-forest	37464522	30
11	water	5102224	30
12	gain	1133899	50
13	count<5	185646	30
14	fallow	5461642	150
15	gfw+fallow	511452	30
22	gfw+low	222942	50

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23	gfw+med	185201	50
24	gfw+high	263398	50
26	gfw+sec low	112229	50
27	gfw+sec high	234273	50
34	gfw+fallow	166091	50
35	gfw+dense	1020293	101
36	buff gfw+dense	257408	50

Note that there is a different number of sampling strata between the first monitoring period (8 strata), the second monitoring period (23 strata) and the reference level period (9 strata). The table in the "AreaCalculation" sheet (cells L 27.. P37) of the AD_calculationTool_MP_rev workbook shows the difference in the number of sampling strata between the monitoring and reference periods. The reference period includes the buffered changes (strata 4 to 8) and also the second monitoring period (strata 15 to 18) to minimize the uncertainty associated with omission errors, as suggested by Olofsson et al. in 2020. On the other hand, for the first monitoring period, the inclusion of strata of buffered changes was unnecessary, as uncertainty was already at the desired levels.

Response design: The Response design included defining the assessment unit as 30m pixels from the mapped strata population, source reference data in the form of 16-day Landsat composite time-series data from 2000 through 2024, supplemented by Google Earth imagery. A detailed labeling protocol is described exhaustively in Standard Operating Procedures and includes decision trees and LULC classification systems in order to allow the unambiguous classification of the sample units. The sample-based analysis consisted of stratified randomly selected pixels across the area of Maï-Ndombe province. While the sampling unit was a pixel, and each pixel was examined at annual timescales, assessment was also facilitated by spatiotemporal context. Each sampling unit was interpreted using time-series Landsat and Google Earth imagery and time-series of individual spectral measures. Expert image interpreters analyzed the reference sampling units and labeled them at annual intervals as either primary forest, secondary forest, and non-forest, as well as transitions, type of change (loss or gain), driver, and the year of change. For pixels that were not interpreted consistently between the analysts, an additional analyst was engaged, and all analysts worked together to reach a consensus in making final assignments. The interpretation team included participants from the project consortium of DIAF/UMD.

Sampling unit interpretation protocol**:** Interpretations of each sampling unit selected for analysis began with a decision tree that provided a dichotomous rule set for assigning labels. The decision tree for assigning land cover is based on physiognomic-structural attributes of vegetation, specifically height and cover. Vegetation cover and height are used to differentiate forests from savanna and non-forest categories, with 30% cover and >3m height defining forests. For tree canopy cover >=60%, we separate dense tree cover into dense humid (primary) terra firma and wetland forests and secondary (regrown) forests. Dense humid forest is differentiated from secondary humid forest by the spectral signature from greater vertical variation and texture associated with old growth forests compared to the more uniform canopies associated with colonizing tree species.

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	Area estimation for activity data: Area estimates were made for three scenarios: 1) consensus labels of all sampling units, 2) only samples where all interpretations agreed, and 3) subsets of sampling units with the same average annual number of observations per epoch, for example where we have at least 5 good annual Landsat observations per sample for all samples. Scenarios 2) and 3) served to evaluate the sensitivity the final consensus estimates to removing samples lacking interpreter consensus or removing samples with few quality image observations. For a stratified random sample of pixels within nine strata, annual binary labels of yes/no for each stable land cover and transition class were assigned. Areas for each class were calculated per the following calculations, given the mean proportion of class ***i*** in stratum ***h***: $\bar{p}_{ih} = \frac{\sum_{u \in h} p_{iu}}{n_h}$ where p_{iu} = 1 if pixel *u* is identified as class *i*, and 0 otherwise; n_h – number of samples in stratum *h* Estimated area of class ***i***: $\hat{A}_i = \sum_{h=1}^{H} A_h \bar{p}_{ih}$ where A_h – total area of stratum *h*; H – number of strata (*H = 9*) Standard error of the estimated area of class ***i:*** $SE(\hat{A}_i) = \sqrt{\sum_{h=1}^{H} A_h^2 \frac{\bar{p}_{ih}(1-\bar{p}_{ih})}{n_h - 1}}$
QA/QC procedures applied:	QA/QC procedures for the AD estimate of the monitoring period were the same applied for the Reference Period. That included the definition of clear roles and responsibilities in QA/QC, the definition of SOPs[28], training on the defined SOPs, multiple interpreters per sample unit, and final quality assurance check to ensure the data quality. All sample pixels were initially interpreted by at least two independent experts. Each analyst assigned to each sample pixel the following labels: loss month and year, pre- and post-disturbance land cover type, land cover proportion, availability of high-resolution image, and forest disturbance driver, and expert's confidence (high/medium/low) separately for all labels. After the initial interpretation, a consensus exercise was performed for all sampled pixels featuring disagreement between interpreters or with low confidence for any interpreter. An additional expert joined the exercise, and a group discussion was undertaken to make the final assignment of land cover extent and change dynamics. Given the final interpretations, we assessed the sensitivity of the method as a function of interpreter agreement and data richness.
Uncertainty for this parameter:	Uncertainty stems primarily from: i. Errors made in interpretations of Landsat imagery resulting in incorrect landcover change classes.

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	ii. The sampling errors. The presented work sought to improve the accuracy of the existing reference emissions level calculations through a more robust methodology to estimate activity data. Improvements to the method included 1) stratification on activities for which emissions are estimated using maps of forest cover dynamics of Maï-Ndombe province derived from dense time-series Landsat imagery, 2) more intensive use of the Landsat archive as reference data, 3) sensitivity assessment of measurements of reference data as a function of interpreter agreement and data richness. The principal improvement was derived from the stratification that enabled the efficient allocation and interpretation of reference data. Our goal of <20% uncertainty at the 90th percentile confidence interval for activity data from 2009-2020 was achieved using 1,169 samples. The initial FREL had higher uncertainties derived using over 30,000 samples. The methodological efficiency points to the possible extension of the approach to the national scale. Concerning the differences in areas, we believe that fewer samples interpreted by a small team of experts following a strict protocol of signal-based identification of forest loss and gain is a more robust approach.
Any comment:	

4 QUANTIFICATION OF EMISSION REDUCTIONS

All reported estimates in this section are calculated using the template tool provided by the FCPF: https://www.dropbox.com/scl/fi/lzzyzy46sv6jaj2ek1ep4/DRC_MR2_Fixed-removals_fcpf_er-mr_template_tool_sections_4_7_8_annex4_0-Copy.xlsm?rlkey=7gb56purz7rptgr8spm14d9x6&st=ajuq1mqu&dl=0

4.1 ER Program Reference level for the Monitoring / Reporting Period covered in this report

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Year of Monitoring/ Reporting Period *t*	Average annual historical Emissions from deforestation over the Reference Period (tCO_{2-e}/yr)	If applicable, average annual historical Emissions from forest degradation over the Reference Period (tCO_{2-e}/yr)	If applicable, average annual historical enhanced Removals from afforestation/ reforestation (A/R) (tCO_{2-e}/yr)	If applicable, average annual historical enhanced Removals from other activities besides A/R (tCO_{2-e}/yr)	Adjustment, if applicable (tCO_{2-e}/yr)	Reference Level with adjustment (tCO_{2-e}/yr)	Reference Level without adjustment (tCO_{2-e}/yr)
2021	24,038,150	4,879,242	-1,260,399	0	5,788,886	33,445,879	27,656,992
2022	24,038,150	4,879,242	-1,680,533	0	5,788,886	33,025,745	27,236,858
Total	48,076,300	9,758,484	-2,940,932	0	11,577,772	66,471,624	54,893,850

4.2 Estimation of Emissions by Sources and Removals by Sinks included in the ER Program's scope

Quantifying emissions by sources and removals by sinks from the ER Program during the Monitoring Period is shown below. The Emission Reductions calculation tool (DRC_ER_MC_Calculations 2sdERMR_withdata.xlsx) can be accessed at the following link:
https://www.dropbox.com/scl/fi/ffrm2fqiytubz8x6dq3u0/DRC_ER_Calculations-2sdERMR_withdata_corrected.xlsx?rlkey=51b28n7agcho8vfc21v5taixb&st=zfaefqhz&dl=0

Year of Monitoring/ Reporting Period t	Emissions from deforestation (tCO_{2-e}/yr)	If applicable, Emissions from forest degradation (tCO_{2-e}/yr)	If applicable, enhanced Removals from afforestation/ reforestation (A/R) (tCO_{2-e}/yr)	If applicable, enhanced Removals from other activities besides A/R (tCO_{2-e}/yr)	Net Emissions and Removals (tCO_{2-e}/yr)
2021	27,360,053	3,569,808	-2,987,598	0	27,942,263
2022	27,360,053	3,569,808	-3,550,453	0	27,379,408
Total	54,720,106	7,139,616	-6,538,051	0	55,321,671

4.3 Calculation of Emission Reductions

***Total Emissions, Removals and Emission Reductions**:*

T.1	Deforestation	If applicable, forest degradation	If applicable, enhanced Removals from afforestation/ reforestation (A/R)	If applicable, enhanced Removals from other activities besides A/R*	Adjustment, if applicable	Total (tCO_{2-e})
Emissions or Removals in the Reference Level (tCO_{2-e})	48,076,300	9,758,484	-2,940,932	0	11,577,772	66,471,624
Emissions or Removals under the ER Program during the Reporting Period (tCO_{2-e})	54,720,106	7,139,616	-6,538,051	0	0	55,321,671
Emission Reductions during the Reporting Period (tCO_{2-e})	-6,643,806	2,618,868	3,597,119	0	11,577,772	11,149,953

Annual Emissions, Removals and Emission Reductions:

T.2	Deforestation		If applicable, forest degradation		If applicable, enhanced Removals from afforestation/ reforestation (A/R)		If applicable, enhanced Removals from other activities besides A/R*		Adjustment, if applicable		Total (tCO_{2-e})	
Year	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
Emissions or Removals in the Reference Level (tCO_{2-e})	24,038,150	24,038,150	4,879,242	4,879,242	-1,260,399	-1,680,533	0	0	5,788,886	5,788,886	33,445,879	33,025,745
Emissions or Removals under the ER Program during the Reporting Period (tCO_{2-e})	27,360,053	27,360,053	3,569,808	3,569,808	-2,987,598	-3,550,453	0	0	0	0	27,942,263	27,379,408
Emission Reductions during the Reporting Period (tCO_{2-e})	-3,321,903	-3,321,903	1,309,434	1,309,434	1,727,199	1,869,920	0	0	5,788,886	5,788,886	5,503,616	5,646,337

* Please list below which of the ER Program Measures other than A/R that are being considered to generate enhanced Removals:

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Proportion of Emission Reductions per REDD+ activity:

T.5	Emission Reductions during the Reporting Period (tCO_{2-e})	
Year	**2021**	**2022**
Total	5,503,616	5,646,337
Emission Reductions from enhanced Removals from afforestation/reforestation as a percentage of the total FCPF ERs (%)	31.38298530%	33.11739983%
If applicable, enhanced Removals from other activities besides A/R (%)	0,00000000%	0,00000000%
If applicable, forest degradation (%)	23.79224859%	23.19085807%
Deforestation (%)	-60.35855336%	-58.83288582%
Adjustment, if applicable (%)	100.00000000%	100.00000000%

T.6	Year	2021	2022
Emission Reductions from enhanced Removals from afforestation/reforestation as a percentage of the total FCPF ERs (%)		0,00000000%	0,00000000%

Annual Emissions, Removals and Emission Reductions with and without HFLD adjustment (no pro-rata needed):

T.7	Total (tCO_{2-e}) with adjustment			Total (tCO_{2-e}) without adjustment		
Year	**2021**	**2022**	**Total RP**	**2021**	**2022**	**Total RP**
Emissions or Removals in the Reference Level (tCO_{2-e})	33,445,879	33,025,745	66,471,624	27,656,992	27,236,858	54,893,850
Emissions or Removals under the ER Program during the Reporting Period (tCO_{2-e})	27,942,263	27,379,408	55,321,671	27,942,263	27,379,408	55,321,671
Emission Reductions during the Reporting Period (tCO_{2-e})	5,503,616	5,646,337	11,149,953	-285,271	-142,550	-427,821
ERs sold, assigned or otherwise used by any other entity for sale,	3,226,888	3,114,648	6,341,536	0	0	0

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public relations, compliance or any other purpose including ERs accounted separately under other GHG accounting schemes or ERs that have been set-aside to meet Reversal management requirements under other GHG accounting schemes						
Available Emission Reductions during the Reporting Period (tCO_{2}-e)	2,276,728	2,531,689	4,808,417	-285,271	-142,550	-427,821

HFLD-labelled ERs as a % of total FCPF ERs:

T.9	Year	2021	2022	Total
Emission Reductions from HFLD as a percentage of the total FCPF ERs (%)		100.00000000%	100.00000000%	100.00000000%

5 UNCERTAINTY OF THE ESTIMATE OF EMISSION REDUCTIONS

Regarding the Reporting Period, if applicable, it should be indicated how the pro-rata approach has impacted the Uncertainty in each case.

5.1 Identification, assessment and addressing sources of Uncertainty

In the following table the country identifies and discuss in qualitative terms the main sources of uncertainty and its contribution to total uncertainty of Emission Reductions. The measures that have been implemented to address these sources of uncertainty as part of the Monitoring Cycle are also discussed.

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Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty
Activity Data						
Measurement	☑	☑	**Land-use photo-interpretation**: Land-use visual assessment uncertainty is associated with the photo-interpretation consistency. Bias in the photo-interpretation of land use was mitigated by: • For the purposes of per pixel interpretation forest was assigned only if the physiognomic/structural tree cover criteria were met for the sampling unit being analyzed, and if the pixel was part of a 0.5ha or larger contiguous patch of tree cover, which equated to a group of greater than 5 pixels (5 pixels x 30m x 30m / 10000 m2/ha = 0.45ha). • While labels were assigned to pixels at an annual scale, sampling unit assessments employed bi-monthly composites of ~1km^2 false color Landsat subsets as well as graphs of radiometrically normalized 16-day composite spectral data, both covering the entire study period. Such contextual spatial and temporal data facilitated per pixel labeling. • Each sampling unit was also uploaded into Google Earth in kml format which allowed for greater landscape context and possible very high spatial resolution imagery to further assist interpretations. • The QA/QC portion of our work consisted primarily of the inter-comparison of sampling unit interpretations as well as the data richness per sampling unit. Specifically, individual assessments of sampling units were compared and separated into pools of all interpreted sampling units (pixels) and all sampling units less those of initial disagreement. A multi-interpreter consensus assessment was used to resolve disagreements in making final labels. We then compared the two pools of data in assessing the difference in area estimates between the consensus interpretation of the full sample and the initial (default) agreement sample subset. • We also thresholded the populations based upon minimum annual Landsat observation counts and performed a similar comparison of all data versus a presumably higher confidence subset of data rich samples across all years. • The difference in area estimates of all samples versus comparatively data rich samples was examined. In both assessments, if the estimates based on 'default agreement' and 'data rich' sample subsets are within the uncertainty of the estimates based on the entire sample, it may serve as evidence of the robustness of the final results.	High (bias) & Low (random)	Yes	No

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Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty
Representativeness	☑	☑	Time-series Landsat data were used to map the activity in building strata for targeting the themes of interest for sample-based area estimation. The mapped strata were expected to provide substantial sampling efficiencies by targeting largely homogeneous populations, particularly for the relative rare change classes.	Low	Yes	No
Sampling		☑	We estimate activity data using ***pixel-based stratified random sampling*** with 2,000 plots. Stratified random sampling is a method meant to increase sampling efficiencies by targeting homogeneous populations with regards to the categories of interest. The mapped strata were expected to provide substantial sampling efficiencies by targeting largely homogeneous populations, particularly for the relative rare change classes. The new methodological approach sought to produce activity data estimates with low uncertainties using a method that may be readily extended to all provinces in implementing a national monitoring system. In this way, the method aimed to reduce errors associated with the estimates of forest extent and change, but also the time, human resource and effort invested, while maintaining the scientific rigor of and compliance with IPCC requirements.	High	Yes	Yes
Extrapolation	☑		No extrapolation of the Activity Data estimate was necessary. Activity Data were estimated with no stratification. Mapped strata were used to increase sampling efficiencies by targeting homogeneous populations concerning interest categories.	NA	NA	NA
Approach 3	☑		Permanent Sample Units (PSU) of one pixel (30 x 30 meters) were used to ensure the temporal tracking of land use for each period. However, the ER Program conducted two independent surveys to estimate activity data in the Reference Period (2005-2014) and Monitoring Period (2019 – 2020).	High	Yes	No
Emission Factors						
DBH measurement	☑	☑	The error in measuring diameters and heights and potential errors in encoding inventory data. This source of error was not considered in estimating the error on the average AGB10cm. Nevertheless, to reduce this type of error, data cleaning was performed for diameter and height values (outliers The H: DBH model error to which tree height predictions are subject was considered in the estimation of the error on the average $AGB_{10cm.}$	Low	Yes	No
H measurement	☑	☑		High	Yes	Yes
Plot delineation	☑	☑		Low	Yes	No
Wood density estimation	☑	☑	The basal wood densities (BD) of the trees inventoried in the plots are extracted from a reference table aggregating the wood density values from the following sources: • Global Wood Density Database (Chave et al., 2005; Chave et al., 2009) – Only data from tropical Africa are retained from this global database; • Densities of the DIAF (Normes d'inventaire d'aménagement, SPIAF, 2007); • ITTO table (2006); • IPCC table (2006); • ICRAF table (2013). The allometric equation used for the prediction of above-ground biomass incorporates specific wood density as a key parameter. For each species recorded, a match was searched in the Global Wood Density Database.	H (bias) & L (random)	Yes	NO

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Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty
			When a match was found, an average wood density was assigned to it according to the following taxonomic hierarchy, from finest to broadest: Species: Specific value from the Global Wood Density Database Gender: Average density of gender in the base Family: Average of the density of the family in the database Densities assigned are based on measurements made directly from trees. For all trees whose scientific name does not match any referenced species or is unknown, a default value of 0.58 g/cm³ was used for basal wood density. This value corresponds to the average observed in tropical Africa (Reyes et al., 1992; FAO, 1997). The uncertainty related to the bias of using an average wood density for several species was included in the error estimate on the mean AGB for the 10 cm diameter class. This uncertainty component is quantified and plotted in the biomass total error calculations.			
Biomass allometric model	☑	☑	In the absence of a national or regional AGB model, the pantropical model of Chave et al. (2014) was used. The AGB model error to which tree AGB predictions are subject was considered in estimating the error on the average AGB_{10cm}.	High	No	Yes
Sampling		☑	Average AGB_{10cm} estimates based on different inventory plots are subject to a potentially significant sampling error. The latter was considered in estimating the error on the average AGB_{10cm}.	High	Yes	Yes
Other parameters (e.g. Carbon Fraction, root- to-shoot ratios)	☑	☑	Belowground biomass (BGB) was estimated using a root-shoot ratio (RSR), considering AGB_{1cm} as the leaf part. For the classes (i) dry forest/open forest (miombo) and (ii) savannah, the RSR used is 0.2021, corresponding to the ecological zone of tropical moist deciduous forest (Mokany et al. quoted in IPCC 2006). For the classes (i) dense humid forest on terra firma, (ii) dense humid forest on hydromorphic soil, (iii) secondary forest, and (iv) cultivation and regeneration of abandoned cultivation, the RSR used is 0.3720, corresponding to the rainforest ecological zone (Fittkau and Klinge, 1973 et al. cited in IPCC 2006). It should be noted that the crop and abandoned crop regeneration class can be found in both ecological zones, dense tropical forests, and tropical moist deciduous forests. The RSR of 0.37 was used for this class in the two ecological zones to simplify and keep a conservative spirit.	High (bias) & Low (random)	Yes	No
Representativeness	☑		Average AGB_{10cm} estimates based on different inventory plots are subject to a potentially significant representativeness bias. The SUs retained for estimating biomass values come from different inventories with independent sampling plans and therefore do not respect strictly random samples. It should indeed be emphasized that a large proportion of SUs come from the former province of Bandundu (southwest of the country) and that they are therefore not representative of the whole of the DRC. However, it should be noted that the former province of Bandundu presents all the land cover classes encountered across the DRC.	High	Yes	No
Integration						
Model	☑		Control Mechanisms of material errors have been included in emission and removal calculations tools, i.e., sums of sampling points by forest type	Low	Yes	No

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Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty
			coincide with sample size ensuring no double counting in the sample-based activity data estimate.			
Integration	☑		Activity Data and Emission Factors are comparable. Carbon densities have been estimated according to the forest types (permanent and secondary), and non-forest land uses interpreted in the visual assessment of Landsat imagery.	Low	Yes	No

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5.2 Uncertainty of the estimate of Emission Reductions

Parameters and assumptions used in the Monte Carlo method

Parameters included in the model	Parameter values	Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Assumptions
Activity data				
Secondary regeneration-2005-2009 [ha]	112,734 ± 21,780	Sampling error	Truncated and positive normal values	Normal PDF
Secondary regeneration-2010-2014 [ha]	126,499 ± 22,330		Truncated and positive normal values	Normal PDF
Secondary regeneration-2019-2020 [ha]	138,070 ± 35,773		Truncated and positive normal values	Normal PDF
Secondary Regeneration-2021-2022 [ha]	64,101 ± 17,859		Truncated and positive normal values	Normal PDF
Forest degradation 2005-2009 [ha]	53,562 ± 13,453		Truncated and positive normal values	Normal PDF
Secondary def. 2005-2009 [ha]	107,786 ± 21,105		Truncated and positive normal values	Normal PDF
Dense humid def. 2010-2014 [ha]	96,142 ± 15,014		Truncated and positive normal values	Normal PDF
Forest degradation 2010-2014 [ha]	91,194 ± 19,227		Truncated and positive normal values	Normal PDF
Secondary def. 2010-2014 [ha]	273,558 ± 43,992		Truncated and positive normal values	Normal PDF
Dense humid terra fime def. 2019-2020 [ha]	23,736 ± 3,686		Truncated and positive normal values	Normal PDF
Dense humid terra fime def. 2021-2022 [ha]	23,072 ±4,040		Truncated and positive normal values	Normal PDF
Dense wetland def. 2019-2020 [ha]	759 ± 919		Truncated and positive normal values	Normal PDF
Dense wetland def. 2021-2022 [ha]	646 ± 613		Truncated and positive normal values	Normal PDF
Forest degradation 2019-2020 [ha]	13,808 ± 3,612		Truncated and positive normal values	Normal PDF
Forest degradation 2021-2022 [ha]	21,182 ± 5,422		Truncated and positive normal values	Normal PDF
Secondary def. 2019-2020 [ha]	96,651 ± 19,003		Truncated and positive normal values	Normal PDF
Secondary def. 2021-2022 [ha]	109,367 ± 18,358		Truncated and positive normal values	Normal PDF
Primary terra firme forest 2005-2009 [ha]	5,813,199 ± 299,055		Truncated and positive normal values	Normal PDF
Primary terra firme forest 2010-2014 [ha]	5,625,863 ± 298,453		Truncated and positive normal values	Normal PDF
Dense humid forest 2005-2009 [ha]	2,392,511 ± 289,802		Truncated and positive normal values	Normal PDF
Dense humid forest 2010-2014 [ha]	2,392,511 ± 289,802		Truncated and positive normal values	Normal PDF

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Parameters included in the model	Parameter values	Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Assumptions
Secondary forest 2005-2009 [ha]	766,342 ± 108,697		Truncated and positive normal values	Normal PDF
Secondary forest 2010-2014 [ha]	659,081 ± 103,217		Truncated and positive normal values	Normal PDF
Carbon densities				
FSc (secondary forest) [tdm/ha]	236.701 ± 58	**Random and systematic measurement errors (DBH, height, plot size, wood specific gravity, allometric model error)** The following sources of error have been quantified for estimating the error in total biomass per stratum: • The bias of using an average wood density for several species • The H:DBH model error to which tree height predictions are subject • AGB model error • Sampling error in estimating average total biomass per stratum	Truncated and positive normal values	Normal PDF
CRCA (non-forest) [tdm/ha]	32.90 ± 6		Truncated and positive normal values	Normal PDF
FDHTF (primary forest terra firme) [tdm/ha]	432.30 ± 20		Truncated and positive normal values	Normal PDF
FDHSH (dense humid wetland forest) [tdm/ha]	415.48 ± 44		Truncated and positive normal values	Normal PDF

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Quantification of the Uncertainty of the estimate of Emission Reductions

The table below shows the uncertainty of aggregated Emission Reductions at the 90% confidence level. Uncertainty is reported for both the Reporting Period and for the period since the Crediting Period Start date. Uncertainty discount applicable is based on the highest of both uncertainties. Monte Carlo Analysis tool can be accessed at the following link:
https://www.dropbox.com/scl/fi/o4cmn5o0a49jyj7uxi08k/DRC_ER_MC_Calculations-2sdERMR_withdata_21-22.xlsx?rlkey=tmeytl1n79bq1lpqtts50mzpv&st=w4tu8zkm&dl=0

		Reporting Period	Crediting Period
		Total Emission Reductions*	**Total Emission Reductions***
A	**Median**	10,892,600	27,332,123
B	**Upper bound 90% CI** (Percentile 0.95)	25,618,431	52,090,793
C	**Lower bound 90% CI** (Percentile 0.05)	-5,569,954	760,630
D	**Half Width Confidence Interval at 90% (B – C)/ 2**	15,594,193	25,665,082
E	**Relative margin (D / A)**	143%	94%
F	**Uncertainty discount**	15%	12%

*Remove forest degradation from the estimate if forest degradation has been estimated with proxy data.
**Remove the column if forest degradation has not been estimated using proxy data.

5.3 Sensitivity analysis and identification of areas of improvement of MRV system

Activity data contributes 94.8 % of the variability in the uncertainty of emission reductions. With almost 50%, secondary deforestation for the period 2021-2022 is by far the most significant source of variability in the uncertainty estimate of activity data. Additional sources are secondary deforestation for the period 2010-2014 (11.4%), dense humid terra firme deforestation 2021-2022 (9.2%), secondary regeneration 2019-2020 (5.8%) and dense humid terra firme deforestation 2010-2014 (5.1%). Secondary Forest carbon density contributes 4,0 %of ER uncertainty.
Technical and financial support is required to identify options to reduce the uncertainty in estimating deforestation in primary and secondary forests. Sensitivity Analysis tool can be accessed at the following link:
https://www.dropbox.com/scl/fi/bq9bzfzemrnis3h7u72nc/DRC_ER_MC_Calculations-2sdERMR_SensitivityAnalysis_21-22.xlsx?rlkey=ve7i9iugryhax6ksu9jhqw043&st=qs10hxel&dl=0

Table 5-15-1: Sensitivity analysis of Emission Reductions estimates for the Reporting Period.

Input Variable	Low Output	Base Case	High Output	**Percent**
Secondary Def. 2021-2022 [ha]	127,725	109,367	91,010	48.4%
Secondary Def. 2010-2014 [ha]	229,566	273,558	317,550	11.1%
FSc (secondary forest) [tdm/ha]	295.01	236.71	178.41	10.1%
Dense Humid Def. Terra firma 2021-2022 [ha]	27,113	23,072	19,032	9.0%
Dense Humid Def. 2010-2014 [ha]	81,128	96,142	111,156	5.0%

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Forest degradation 2021-2022 [ha]	26,603	21,182	15,760	3.9%
Dense Humid Def. 2005-2009 [ha]	46,594	58,501	70,409	3.1%
Secondary Def. 2005-2009 [ha]	86,682	107,786	128,891	2.6%
Forest degradation 2010-2014 [ha]	71,966	91,194	110,421	2.0%
Secondary regeneration-2019-2020 [ha]	102,297	138,070	173,843	1.8%
FDHTF (primary forest terra firme) [tdm/ha]	412.30	432.30	452.30	1.0%
Forest degradation 2005-2009 [ha]	40,109	53,562	67,015	1.0%
Secondary regeneration-2021-2022 [ha]	46,242	64,101	81,959	0.3%
Dense Humid Wetland Def 2021-2022 (ha)	1,259	646	0	0.2%
FDHSH (Dense humid wetland forest) [tdm/ha]	371.03	415.48	459.93	0.1%
Secondary regeneration-2010-2014 [ha]	148,830	126,499	104,169	0.1%
Secondary regeneration-2005-2009 [ha]	134,515	112,734	90,954	0.1%
Primary terra firme forest 2005-2009 [ha]	5,514,144	5,813,199	6,112,254	0.0%
Primary terra firme forest 2010-2014 [ha]	5,327,410	5,625,863	5,924,316	0.0%
Dense humid wetland forest 2005-2009 [ha]	2,102,708	2,392,511	2,682,313	0.0%
Dense humid wetland forest 2010-2014 [ha]	2,102,708	2,392,511	2,682,313	0.0%
Secondary forest 2005-2009 [ha]	657,645	766,342	875,040	0.0%
Secondary forest 2010-2014 [ha]	555,864	659,081	762,298	0.0%
CRCA (non-forest) [tdm/ha]	38.51	32.90	27.29	0.0%
Dense humid degradation 2010-2014 [ha]	71,966	91,194	110,421	0.0%
Dense humid degradation 2005-2009 [ha]	40,109	53,562	67,015	0.0%

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Dense Humid Wetland Def. 2005-2009 [ha]				0.0%
Dense Humid Wetland Def. 2010-2014 [ha]				0.0%
Dense Humid Def. Terra firma 2019-2020 [ha]	20,051	23,736	27,422	0.0%
Dense Humid Wetland Def 2019-2020 (ha)	0	759	1,678	0.0%
Forest degradation 2019-2020 [ha]	10,196	13,808	17,420	0.0%
Secondary Def. 2019-2020 [ha]	77,649	96,651	115,654	0.0%

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6 TRANSFER OF TITLE TO ERS

6.1 Ability to transfer title

The transfer of title is conducted in accordance with the approval framework established by Decree No. 047/CAB/MIN/EDD/AAN/MML/05/2018, dated May 9, 2018, which sets out the procedures for the Democratic Republic of Congo (DRC) to confer and transfer carbon titles. In addition to the legal framework—including the homologation decree and environmental law—the transfer process incorporates a specific assessment of land tenure and resources within the accounting area. This assessment: (i) identifies legal and customary rights related to access, use, management, and exclusion (including those of Indigenous Peoples and Local Communities, IPLCs/IPs); (ii) maps potential rights holders and areas of overlap or conflict; (iii) analyzes gaps and ambiguities in the applicable framework; and (iv) evaluates the potential impacts of the Program on these rights.

The steps for the transfer of carbon title in DRC:

(i) Project Accreditation and Homologation

- Preparation of Documentation: The project proponent prepares all required documentation demonstrating the project's objectives, expected carbon benefits, and compliance with environmental and social safeguards.
- Submission for Homologation: The project is submitted to the Ministry of Environment and Sustainable Development (MEDD) for homologation, in accordance with Decree No. 047/CAB/MIN/EDD/AAN/MML/05/2018. This includes a detailed assessment of land tenure, legal and customary rights (including those of Indigenous Peoples and Local Communities), and potential overlaps or conflicts.
- Review and Approval: The homologation commission reviews the submission, conducts stakeholder consultations, and issues a homologation certificate if all requirements are met. This certificate is essential for the project to be recognized as eligible for carbon title transfer.

(ii) Measurement, Reporting, and Verification (MRV)

- Monitoring Reports: The project implements robust MRV systems to quantify emission reductions or removals. Periodic monitoring reports are produced and submitted for third-party verification.
- Verification: An independent auditor verifies the reported emission reductions. Only verified emission reductions (ERs) are eligible for title transfer.

(iii) Benefit Sharing and Safeguards

- Benefit Sharing Plan (BSP): A BSP is developed and approved, outlining how revenues and benefits from carbon credits will be distributed among stakeholders, including local communities and Indigenous Peoples. This is a prerequisite for payment and title transfer.
- Safeguard Instruments: Environmental and social safeguard instruments are updated and validated to ensure compliance with the buyer (e.g., the World Bank Carbon Fund) and national standards.

(iv) Legal Confirmation and Government Authorization

- Government Letter of Transfer: The MEDD, as the holder of the homologation certificate and owner of the carbon credits, issues a formal letter authorizing the Ministry of Finance (MINFIN) to transfer

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the title of the ERs to the buyer (e.g., the World Bank Carbon Fund). This letter must confirm the government's capacity to transfer title and the non-retroactivity of any future regulatory changes.

- Legal Opinion: An independent legal opinion (from the State Council, a law firm, or a legal scholar) is provided to confirm the validity of the transfer under Congolese law.

(v) Registry and Transaction Recording

- Carbon Assets Tracking System (CATS): The transaction is recorded in the national or international carbon registry (such as the FCPF's CATS), managed by nominated and trained registry managers from MINFIN and MEDD.
- Data Entry, Verification, and Validation: Registry managers enter, verify, and validate data on carbon assets. The registry ensures traceability and prevents double counting.

(vi) Execution of Transfer and Payment

- Transfer Form: The Ministry of Finance signs a transfer form specifying the quantity of ERs and the corresponding payment amount. This form is countersigned by the buyer (e.g., the World Bank).
- Payment Disbursement: Upon confirmation of title transfer and validation of all required documents, payment is made to the designated account, and the ERs are credited to the buyer's registry account.

(vii) Post-Transfer Audits and Compliance

- Annual Audits: The National REDD+ Registry and its transactional module are audited annually to verify compliance, robustness of carbon accounting, and integrity of the transfer process.
- Stakeholder Consultations: Ongoing consultations and workshops are held to ensure transparency, address grievances, and improve national REDD+ infrastructure.

Key Considerations

- Legal Framework: The process is anchored in the 2018 Homologation Decree; however, ongoing reforms—including the formal establishment of the Carbon Market Regulatory Authority (CMRA) through Decree 23/22 of June 14, 2023 and updates to the homologation manual—are further strengthening the regulatory environment. This authority aims to provide oversight and attract investment in the DRC's burgeoning carbon market by creating a regulatory framework for the voluntary carbon market to operate effectively within the country. On Wednesday, July 23, 2025, a presidential ordinance appointed the Board of Directors of CMRA. However, the implementation of this ordinance has not yet been realized.
- Stakeholder Engagement: Free, Prior, and Informed Consent (FPIC) of local communities and Indigenous Peoples is required throughout the process.
- Transparency and Integrity: The registry system and annual audits are critical for maintaining transparency and preventing double counting or fraud.

International Standards: The process aligns with international standards for carbon markets, including Article 6 of the Paris Agreement and voluntary market requirements.

-

Deviations from the ER-PD and justifications:

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Differently from the ER-PD forecasts, which initially relied on a document management system (National REDD+ Registry) pending the registry, the Program now adopts a transactional registry architecture:

- During the transitional phase (before the transactional national registry is operational), verified ERs from the FRE Mai-Ndombe are issued, held, and transferred via a centralized registry (CATS/FCPF). Accounts are opened for the Government (with sub-accounts for jurisdictional or regional programs). Upon issuance, a distinct allocation is credited to the government buffer account (uncertainty and reversal risk).
- Upon the operationalization of the National REDD+ Registry, all units and their history (serialization, issuances, transfers, cancellations) are migrated to the national registry, with full metadata retention.

This transitional measure allows for the management of complex flows (issuance/transfer/cancellation) where a simple file deposit provides neither an audit trail nor anti-double-counting controls. The logging of movements and aggregated public dashboard enhance accountability. The preparation of a gateway to the national registry and, if necessary, the referencing of exports to recognized international registries (monetization of surplus volumes).

In summary, the transition from Dropbox → transactional registry (transitional) → national registry constitutes a functional and governance upgrade compared to the ER-PD: it enhances transparency, reduces the risk of double counting, and secures the execution of PPB/BSP transfers and payments. In line with the ERPA operationalization action plan, the following steps are currently in progress:

- Revision of the approval decree and finalization of the procedures manual (alignment with the decree).
- Organization of Ministry services for implementation (roles, decision circuits, SOP, interoperability with the registry).
- Lifting the requirement for “release” of WWC credits: not required at this stage, given the subtraction of WWC project emission reductions from the total ERP (already accounted for).
- Letter from MEDD to FCPF confirming the DRC's capacity to transfer titles (after completion of the above steps).

In parallel, the Government of the Democratic Republic of Congo (MEDD) has initiated legal reforms to strengthen the framework for valorizing emission reductions (ERs). Central to this effort is the amendment of Law No. 11/009 of July 9, 2011, which defines the core principles of environmental protection. The amendment bill, introduced by MEDD and adopted on February 3, 2023, establishes the Carbon Market Regulatory Authority (CMRA), whose organization and operations are set by a Prime Ministerial decree. This provides a legal basis for certifying carbon projects and facilitating related transactions. Building on the 2018 Homologation Decree, ongoing reforms—including the creation of ARMCA and updates to the homologation manual—continue to reinforce the regulatory environment. Notably, Decree 23/22 of June 14 formally establishes the CMRA’s creation, organization, and operation in the DRC.

whose organization and operation are set by decree of the Prime Minister, and provides the legal basis for the certification procedure of carbon projects and associated transactions.

This revision allows for the implementation of key action plan steps:

- Prepare and approve the decree establishing the Authority (mandate, roles, responsibilities).
- Prepare and approve the revised approval decree, including the procedural manual defining the process and responsibilities for project registration within the ERP.

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The preparation and approval of these decrees are supported by the World Bank through the OPERPA project ("Support to the Effectiveness and Operationalization of the ERPA under the Maï-Ndombe ER Program") as well as the 2023 Budget Support dedicated to the establishment of the institutional and technical framework for carbon markets and project registration

6.2 Implementation and operation of Program and Projects Data Management System

The implementation and operation of the program and project data management system are essential elements of the OPERPA project. This project aims to support institutions involved in REDD+ MRV in the DRC, including the DIAF, in producing reliable biennial reports on estimated carbon emissions from the Mai-Ndombe region. This technical assistance will include partnerships with institutions such as the University of Maryland, which has already produced the 2019-2020 and 2021-2022 monitoring reports currently in production. Additionally, the project will facilitate field missions and supply the necessary equipment to operationalize MRV systems within the Mai-Ndombe jurisdiction.

To facilitate stakeholder consultation, the project will support the organization of workshops for the DRC's Plateforme Technique de Consultation (PTC), which is dedicated to the development and operation of the Mai-Ndombe ERP. Additionally, this activity will provide support to the FIP coordination unit's Geographic Information System (GIS) expert, who will be responsible for quality assurance and training. Currently, all data is publicly accessible via the DIAF Dropbox (https://www.dropbox.com/scl/fo/fnfqupbc5cvm07ksyoezp/h?rlkey=0cb794w54jout87exbraba8f8&dl=0).

However, this information is being transferred to the new National Forest Monitoring System portal, which is currently undergoing hosting renewal and domain name change, and to the REDD+ National Registry. The developing version of the register can be accessed at https://imagis-group.com/rdc/. All data is made transparently available.

The Ministry's current web platform is the main tool used for monitoring activities in the field. It will be accessible to the public and will comprise several systems, including the National Forest Monitoring System, the Forest Atlas, the Safeguards Information System and the National REDD+ Register. These systems make it possible to map the project's achievements, to geographically locate actors and beneficiaries in the project zones, to evaluate, analyze, correct and validate geographical data generated by the implementation of project activities, and to produce maps and cartographic works as required.

The DRC National REDD Register plays a crucial role as a centralized database of all relevant information and data from emission reduction programs, projects and initiatives. It make it possible to register and approve projects, avoid double registration of territories and double accounting of carbon performance and transactions.

In summary, the DRC National REDD Registry has two main objectives: to centralize information on the implementation of REDD+ interventions in the DRC, and to ensure transparency in the monitoring of public and private REDD+ funding and results.

6.3 Implementation and operation of ER Transaction Registry

Since the transactional national REDD+ registry is not yet operational, its revision and operationalization will be carried out with the support of the OPERPA project. In the meantime, the Program is setting up a transitional system to ensure environmental integrity, traceability of titles, and the absence of double counting.

The validated emission reductions (ER) (after verification of carbon accounting and social and environmental requirements) are recorded and serialized in a centralized transitional registry (CATS of the FCPF), until the national registry becomes operational. Accounts are opened for: (i) the Government (with sub-accounts dedicated to jurisdictional or regional programs), (ii) approved project proponents.

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Upon issuance, the ERs are credited to the relevant accounts, and a separate allocation is made to one or more government buffer accounts to cover uncertainty and the risk of reversal. Transfers (e.g., ERPA execution) are processed from or to these accounts, with complete logging (holder, volume, date, audit reference).

Once the national registry is operational, all units issued and movements recorded in the transitional system will be migrated to the national registry, with full retention of metadata (serial numbers, issuance/transfer/cancellation history). A correspondence table (mapping of identifiers) and an audit protocol will ensure the continuity of titles and the uniqueness of series.

The issuance of ERs is subject to: (i) the conformity of the declared volume to the perimeter/eligibility, (ii) independent verification, (iii) exclusivity control via the database of approved projects (georeferencing, monitoring period, reference level). Any external transfer (e.g., to an internationally recognized registry to monetize surplus volumes) is first recorded in the transitional system, with an "export" marking and the cross-reference of the reissued or converted unit to prevent double issuance. Embedded projects with their own registry perform systematic reconciliation (before issuance) with the national approval database and the transitional log to avoid double registration.

A public (aggregated) dashboard periodically publishes: volumes issued, held, transferred, canceled, and buffer stocks; sensitive account-level information is protected but auditable. Title flows are aligned with the Benefit Sharing Plan (PPB/BSP): payments are derived solely from issued and traceable ERs, and allocations to beneficiary categories follow PPB rules. The integrity rule applies: "one unit, one holder, one accounting," at all stages (issuance, transfer, cancellation).

6.4 ERs transferred to other entities or other schemes

The method, applied, the value, and the traceability are documented with supporting documents (correspondence Government–Verra, approval, registry captures, located in the dropbox folder containing all the evidence data.

The Mai Ndombe REDD+ nested project, managed by Wildlife Works (WWC), is registered with VCS-VERRA as an active VCU issuer. The project issued a total of 2,904,200 tCO2eq VCU for 2021 and 2,604,452tCO2eq VCU for 2022 under VCS-VERRA. For the same periods, Verra collected 322,688 tCO2eq VCU for 2021 and 510,196 tCO2eq VCU for 2022 for the non-permanence buffer. The total ERs per year to be deducted to avoid double counting amounts to 3,226,888 tCO2eq for 2021 and 3,114,648 tCO2eq for 2022. These volumes have been deducted from the PRE performances reported in the second monitoring report (see section 8) to comply with the requirements of criteria 23 and 38 and to avoid double counting and double emission reductions.

The link to the VCU record is here:

https://registry.verra.org/app/search/VCS?programType=ISSUANCE&exactResId=934

There you will find the volume issued for both vintages.

For the 2021 vintage the Report (see https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=109122&IDKEY=iiquwesdfmnk0iei23nnm435oiojnc909dsflk9809adlkmlkfk150479238) indicates in page 57 (see Screen capture posted in previous response)

An overall performance of 3,226,889 tCO2eq out of which 10% (322,689 tCO2eq) can be collected towards the buffer.

For 2022, the report with numbers matching the VCUs issued is here: https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=143281&IDKEY=lkjalskjf098234kj28098sfkjlf098098kl32lasjdflkj909s197584499

The screen capture showed above is from that report. The table number is 3-10 as showed in the capture (page 199 of the report),

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The workbook "Mai Ndombe M5_v3.2.xlsx" presents the volume of emission reductions for M4 (2021) and M5 (2022) relative to the level of 3,800,000 tCO2eq in the "FCPF REL" sheet, located here:
https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=143286&IDKEY=o8723kjnf7kjandsaslmdv09887vaksmrmnwqkjoiuanfnfuq0k197591394

the verification report is here:
https://registry.verra.org/mymodule/ProjectDoc/Project_ViewFile.asp?FileID=109122&IDKEY=iiquwesdfmnk0iei23nnm435oiojnc909dsflk9809adlkmlkfk150479238

7 REVERSALS

7.1 Occurrence of major events or changes in ER Program circumstances that might have led to the Reversals during the Reporting Period compared to the previous Reporting Period(s)

Intentionally left blank. No reversals occurred during the reporting period.

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7.2 Quantification of Reversals during the Reporting Period

Intentionally left blank. No reversals occurred during the reporting period.

A.	**ER Program Reference Level for this Reporting Period (tCO_2-e)**	*from section 4.1*		
B.	**ER Program Reference Level for all previous Reporting Periods in the ERPA (tCO2-e).**	*from section 4.1 of previous ER Monitoring Reports*		+
C.	**Cumulative Reference Level Emissions for all Reporting Periods [A + B]**			
D.	**Estimation of Emissions by Sources and Removals by Sinks for this Reporting Period (tCO_2-e)**	*from section 4.2*		
E.	**Estimation of Emissions by Sources and Removals by Sinks for all previous Reporting Periods in the ERPA (tCO_2-e)**	*From section 4.2 of previous ER Monitoring Reports*		
F.	**Cumulative Emissions by Sources and Removals by Sinks including the current Reporting Period (as an aggregate accumulated since the Crediting Period Start Date) [D + E]**			–
G.	**Cumulative quantity of Total ERs estimated including the current Reporting Period (as an aggregate of ERs accumulated since the Crediting Period Start Date) [C – F]**			
H.	**Cumulative quantity of Total ERs estimated for prior Reporting Periods (as an aggregate of ERs accumulated since the Crediting Period Start Date)**	*from previous ER Monitoring Reports*		–
I.	**[G – H], negative number indicates Reversals**			

If I. above is negative and Reversals have occurred complete the following:

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J.	**Cumulative quantity FCPF ERs (as an aggregate of FCPF ERs accumulated since the Crediting Period Start Date)**	*from previous ER Monitoring Reports, section 8*	
K.	**Cumulative ER Program´s Pooled Reversal Buffer contributions (as an aggregate of Pooled Reversal Buffer ERs accumulated since the Crediting Period Start Date)**	*from previous ER Monitoring Reports, section 8*	
L.	**Cumulative ER Program´s Uncertainty Buffer contributions (as an aggregate of Uncertainty Buffer ERs accumulated since the Crediting Period Start Date)**	*from previous ER Monitoring Reports, section 8*	
M.	**Cumulative ER Program´s Pooled Reversal Buffer replenishments (as an aggregate of Reversal Buffer ERs replenished since the Crediting Period Start Date)**	*from previous ER Monitoring Reports, section 7.3*	
N.	**Cumulative amount of FCPF ERs, Uncertainty and Pooled Reversal Buffer contributions and replenishments (as an aggregate since the Crediting Period Start Date) [J + K + L + M]**		
O.	**Quantity of Buffer ERs to be canceled from the Pooled Reversal Buffer account [If I < N, report the value of I; if I > N, report the value of N]**		

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7.3 Quantification of Pooled Reversal Buffer replenishments

No reversals have occurred during this period. Therefore this section does not apply.

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7.4 Reversal Risk assessment

The program uses the rollover risk assessment tool to determine the reversal risk reserve percentages for each of these countries. These risk factors, as specified in Section 7.4.1, are as follows:

- FCPF default risk (10%)
- Lack of broad and sustained stakeholder support in current contexts (Medium, 5%)
- Lack of institutional capacity and/or ineffective vertical/intersectoral coordination, given the limited progress (medium, 5%)
- Lack of long-term effectiveness in addressing underlying factors (high, 5%)
- Exposure and vulnerability to natural disturbances (high, 5%)

This analysis found that the overall risk of reversals in the program area is 30%. The situation in the province has not changed. The Program manages rollover risks through an ER Program buffer reserve; a buffer reserve account has been established for this purpose in an appropriate ER transaction registry (Registry, CATS), in accordance with the terms of the FCPF Registry.

As noted in Section 7, there was no reversal during the reporting period and the program reduced its net emissions by 14,787,065 tCO2e during this period.

Risk Factor	Risk indicators	Default Reversal Risk Set-Aside Percentage	Discount	Resulting reversal risk set-aside percentage
Default risk	*N/A*	**10%**	*N/A*	*10%*
Lack of broad and sustained stakeholder support	Different mechanisms defining and formalizing broader stakeholder support are implemented in various areas and in an integrated approach, including: 1. **Inclusive Governance and Participatory Structures** ○ **Steering Committees (COPIL)** at the national and provincial levels: These bodies bring together the government, civil society, the private sector, and technical and financial partners. ○ **Local Development Committees (CLD)**: They allow communities to participate in the planning and monitoring of activities at the local level. The program plans to train and support about 80% of the CLDs in the province. The program also plans to establish CLDs in areas where they do not yet exist. This includes the development and animation of 531 new PSATs and the animation of 1,200 existing PSATs. ○ **Regular Consultations**: Each major step (Benefit Sharing Plan, revision of the reference level, activity planning) has been subjected to public consultations. 2. **Legal Framework and Rights Security**	**10%**	*Medium risk -5%*	*5%*

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	○ **Recognition of customary rights and creation of CFCL (Local Community Forest Concessions)** to give communities official management rights. The program plans to implement simple management plans in four CFCLs covering 350,000 hectares of forests. ○ **Formalization of benefit sharing through the Benefit Sharing Plan (PPB)**, ensuring transparent redistribution of carbon payments. ○ **Grievance Redress Mechanisms (MGP)** established to resolve conflicts quickly; this mechanism is already in place. 3. **Socio-Economic Co-Benefits** ○ **Direct investments in livelihoods** (agroforestry, improved stoves, community micro-projects). This includes the introduction of cash crops (cocoa, coffee, banana) and support for local sectors such as beekeeping. ○ **Creation of local jobs** related to implementation (reforestation, forest monitoring, fire brigade training). ○ **Capacity building** for local authorities, NGOs, and communities on forest governance and improved agricultural techniques. 4. **Monitoring, Transparency, and Communication** ○ **Robust MRV system with open data (via SNSF)**, allowing stakeholders to see the results. ○ **Regular reports and feedback meetings** with communities to share progress. ○ **Involvement of independent observers** in verification and validation processes. **Conclusion for the evaluation**: Given the multi-stakeholder governance, the effectiveness of the MGP, the operationalization of the ERPA, and the implementation of the BSP (with clearly defined beneficiaries and obligations to return to IPLCS in embedded projects), the Program presents concrete guarantees of support and sustainability that reduce the risk of reversal. The Program still recognizes some capacity and vertical/intersectoral coordination deficiencies, including: (i) some key positions vacant or high staff turnover or regular brain drain, (ii) overlapping mandates and lack of written procedures (SOP) for data sharing and decision-making, (iii) approval and information transmission delays exceeding target thresholds, (iv) limited interoperability between embedded projects and national systems (registry, MRV), and			

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	(v) low regularity of instances (COPIL/PTC) and their action follow-ups. Given these elements and considering the efforts made in the framework of the ERPA Operationalization project, the residual risk related to this factor is classified as medium (5%). This assessment will be revised downwards after the implementation of the corrective measures below and the achievement of performance indicators. • **Governance and coordination**: Reactivation of a quarterly COPIL/PTC schedule; adoption of a RACI matrix (roles/responsibilities); decision SLA (≤ 30 days) with tracking register. • **Procedures and data**: Adoption of standard SOPs (information flow, QA/QC, escalation); sharing protocols (MoU) between UC-PIF/DIAF/embedded projects; monthly feeding of the national registry and the MRV system. • **Capacities and resources**: Capacity building plan (MRV, safeguards, procurement); filling of critical positions; dedicated budget line for coordination and monitoring. **Performance monitoring**: Monthly dashboards (meetings held, decision deadlines, data integration rates, QA/QC recommendations applied) and semi-annual review with corrective action plan.			
Lack of institutional capacities and/or ineffective vertical/cross sectorial coordination	The Program still recognizes some capacity and vertical/intersectoral coordination deficiencies, including: (i) some key positions vacant or high staff turnover or regular brain drain, (ii) overlapping mandates and lack of written procedures (SOP) for data sharing and decision-making, (iii) approval and information transmission delays exceeding target thresholds, (iv) limited interoperability between embedded projects and national systems (registry, MRV), and (v) low regularity of instances (COPIL/PTC) and their action follow-ups. Given these elements and considering the efforts made in the framework of the ERPA Operationalization project, the residual risk related to this factor is classified as medium (5%). This assessment will be revised downwards after the implementation of the corrective measures below and the achievement of performance indicators. **Governance and coordination**: Reactivation of a quarterly COPIL/PTC schedule; adoption of a RACI matrix (roles/responsibilities); decision SLA (≤ 30 days) with tracking register. **Procedures and data**: Adoption of standard SOPs (information flow, QA/QC, escalation); sharing protocols (MoU) between UC-PIF/DIAF/embedded	**10%**	*Medium risk -5%*	*5%*

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	projects; monthly feeding of the national registry and the MRV system. **Capacities and resources**: Capacity building plan (MRV, safeguards, procurement); filling of critical positions; dedicated budget line for coordination and monitoring. **Performance monitoring**: Monthly dashboards (meetings held, decision deadlines, data integration rates, QA/QC recommendations applied) and semi-annual review with corrective action plan.			
Lack of long term effectiveness in addressing underlying drivers	The Program recognizes that long-term effectiveness remains fragile in the face of underlying factors (extensive agriculture, informal charcoal sector, illegal exploitation, uncertain access/tenure, road openings, and demographic/market pressures). The observed risks are: (i) partial adoption of PSAT and intensification practices without robust conditionalities (risk of "internal leakage" by extension), (ii) poorly formalized wood-energy value chains (low traceability, price incentives), (iii) insecure access/tenure limiting sustainable investment, (iv) non-guaranteed maintenance/repair financing (sustainability), (v) low coverage of risk rings and delayed response to warning signals. Given these elements and the context of the OPERPA project activities implementation, the residual risk for this Factor is classified as medium (5%). This assessment will be revised downwards after the implementation of the measures below and the achievement of the agreed indicators. • **Secured Intensification**: Condition support (seeds, supervision) on locally recognized usage/tenure agreements; monitor yields and areas to avoid extension. • **Formalized Charcoal Sector**: Deploy traceability, standardized improved kilns, light checkpoints at road nodes, inter-territorial agreements to limit market leakage. • **Tenure & Local Rules**: Support clarification or usage agreements (community rules, PSAT zoning), mediation via MGP to secure investment. • **Recurrent Financing**: Reserve a BSP "maintenance and reinforcement" envelope for PSAT/kilns/contracts; co-financing with embedded projects. • **Adaptive Management by Alert Thresholds**: Activate rapid responses (micro-grants, field missions, PSAT adjustments) as soon as a threshold is crossed (annual forest loss,	**5%**	High risk *-0%*	*5%*

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	charcoal price spike, increase in MGP complaints). • **MRV Integration & Transparency**: Public dashboards (covered PSAT, hectares intensified under agreements, traced charcoal share, annual loss dynamics). Implementing the above package should reduce the risk of this factor to 5%, subject to achieving the indicators and maintaining finance/conditionalities. .			
Exposure and vulnerability to natural disturbances	Until now, the jurisdictional program has not perceived any major natural risks related to fires, pests, extreme weather phenomena, or any other natural risks. The forest areas remain humid even during dry periods and therefore present a low risk of burning. Thus, the geo-environmental context has not changed, and being in the dense forest zone, they are affected by fires at less than 0.1%. To support this opinion, an analysis of the spatial distribution of fires in the Maï Ndombe province was carried out based on fires recorded by the MODIS sensor on the Terra and Aqua satellites. Fires that occurred between January 2001 and December 2018 were taken into consideration. During these years, a low rate of fires was recorded. Furthermore, no related risks were proven within the Program's perimeter. It is concluded that the existing fire detections do not sufficiently explain the measured variations in forest area. The results of the analysis clearly indicate that, if fire is used by farmers to clear forests, it does not lead to larger-scale forest fires, as is the case, for example, in Indonesia and other Southeast Asian countries.	**5%**	High risk *-0%*	*5%*
		Total reversal risk set-aside percentage		*30%*
		Total reversal risk set-aside percentage from ER-PD or previous monitoring report (whichever is more recent)		*20%*

8 EMISSION REDUCTIONS AVAILABLE FOR TRANSFER TO THE CARBON FUND

Year			2021	2022	Total
A.	**Emission Reductions during the Reporting period (tCO_2-e)**	*from section 4.3*	5,503,616	5,646,337	11,149,953

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B.	**If applicable, number of Emission Reductions from reducing forest degradation that have been estimated using proxy-based estimation approaches (use zero if not applicable)**				
C.	**Number of Emission Reductions estimated using Measurement approaches (A-B)**		5,503,616	5,646,337	11,149,953
D.	**Percentage of ERs (A) for which the ability to transfer Title to ERs is clear or uncontested**	*from section 6.1*	100%	100%	100%
E.	**ERs sold, assigned or otherwise used by any other entity for sale, public relations, compliance or any other purpose including ERs accounted separately under other GHG accounting schemes or ERs that have been set-aside to meet Reversal management requirements under other GHG accounting schemes**	*from section 6.4*	3,226,888	3,114,648	6,341,536
	If applicable, any buffer replenishments	*section 7.3 P*			
F.	**Total ERs [(B+C)*D-E] minus, if applicable, any replenishments as per section 7.3, P**		2,276,728	2,531,689	4,808,417
G.	**Conservativeness Factor to reflect the level of uncertainty from non-proxy based approaches associated with the estimation of ERs during the Crediting Period**	*from section 5.2*	15%	15%	
H.	**Quantity of ERs to be allocated to the Uncertainty Reversal Buffer (0.15*B/A*F)+(G*C/A*F)**		341,509	379,753	721,262
I.	**Total Reversal Risk set-aside percentage applied to the ER program**	*from section 7.4*	30%	30%	

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J.	**Quantity of ERs to be allocated to the Pooled Reversal Buffer (F-H)*I**		580,565	645,580	1,226,145
K.	**Number of FCPF ERs (F- H – J)**		1,354,654	1,506,356	2,861,010
L.	**Percentage of Emission reductions from enhanced Removals from afforestation/reforestation as a percentage of the total FCPF ERs [Optional if the country wishes to generate enhanced Removals]**	*From section 4.3*	0.00000000%	0.00000000%	
M	**Number of FCPF ERs from enhanced Removals from afforestation/reforestation (L * K) [Optional if the country wishes to generate enhanced Removals]**		0	0	0
N	**Percentage of Emission reductions from HFLD [Optional if the country wishes to label HFLD units]**	*From section 4.3*	100.00000000%	100.00000000%	100.00000000%
O	**Number of FCPF ERs from HFLD (L * K) [Optional if the country wishes to label HFLD units]**		1,354,654	1,506,356	2,861,010

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ANNEX 1: INFORMATION ON THE IMPLEMENTATION OF THE SAFEGUARDS PLANS

I. Requirements of FCPF on Managing the Environmental and Social Aspects of ER Programs

Implementation of safeguard measures

Following the Strategic Environmental and Social Assessment (SESA) process, the DRC has adopted an Environmental and Social Management Framework (ESMF) for REDD+ activities thanks to funding from the FCPF and other instruments, as well as the following five specific frameworks that address the particular risks of REDD+ investments. These included a Resettlement Policy Framework (RPF), a Process Framework (PF), an Indigenous Peoples Plan (IPP), an Environmental and Social Management Framework (ESMF), a Cultural Heritage Protection Framework (CHPF), and an Integrated Pest Management Framework (IPMF). They were closely based on the national REDD+ frameworks of the same names, produced earlier as part of the FCPF-funded REDD+ readiness activities in the DRC. In addition, the DRC has drawn up guidelines for a national framework on Free, Prior and Informed Consent (FPIC), in the context of REDD+.

The DRC has also developed its country Safeguards Information System (SIS)[29] or REDD+ as a comprehensive framework to ensure the effective implementation of environmental and social safeguards in the context of REDD+ activities. The development of the SIS involved a collaborative effort between the DRC government, international partners (UNEP, LEAF Coalition), and relevant stakeholders. The SIS was designed to address key elements of REDD+ safeguards, including the protection of biodiversity, respect for the rights of indigenous peoples and local communities, and the promotion of transparent and accountable governance. It provides a mechanism to monitor and evaluate the social and environmental impacts of REDD+ initiatives, ensuring that they adhere to the DRC's national standards and international commitments.

Functionally, the SIS serves as a centralized platform to collect, manage, and disseminate relevant information related to safeguards. It facilitates data gathering, analysis, and reporting, enabling stakeholders to monitor the implementation of REDD+ projects and programs and assess their compliance with safeguards. The SIS incorporates various components, including data management, indicators, monitoring frameworks, and reporting mechanisms. In addition, the DRC prepared and published its First Summary of Information on Safeguards to the UNFCCC in 2022. To ensure the effective functioning of the SIS, capacity building initiatives continue to be conducted to enhance the technical expertise of relevant stakeholders in data collection, analysis, and interpretation.

Currently, two memoranda of understanding exist between PIF-CU and CN-REDD and DIAF, within the framework of the technical assistance to support the Operationalization of the ERPA program, to update the DRC's SIS and produce DRC's second summary of information on compliance and consideration of REDD+ safeguards in the DRC; also the updating of the National Forest Monitoring System (NFMS) portal.
To date, CN-REDD has already established a roadmap to make SIS-REDD operational. This roadmap encompasses four key steps: hosting the tool, preparing and validating the data collection sheet, validating the data, and collecting field data to feed into the SIS. Continuous improvements will be made as the system becomes fully operational.

[29] DRC Safeguard Information System is not currently online. Efforts are underway with CN-REDD (with OPERPA support) to update the report and publish the SIS online.

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Participatory process for developing the ERP

Stakeholders have been consulted extensively on the safeguard documents and on the overall REDD+ emission reduction program. CN-REDD has maintained and continues to maintain constructive dialogue with civil society and indigenous peoples' organizations over a long period of time. All key REDD+ documents have been subject to multiple consultations with hundreds of stakeholders, as reported in the first monitoring report. The various stakeholders involved in the preparation of the ERPD were organized into working groups around the main themes of the ERPD, in which the national civil society platform (Working Group on Climate and REDD+ known as GTCR-R) and the IP network (Network of Indigenous and Local Populations for the Sustainable Management of Forest Ecosystems – REPALEF) participated regularly. In addition, significant efforts were made over three years to inform and consult with local stakeholders in Mai-Ndombe province. The Organisation Congolaise des Ecologistes et Amis de la Nature (OCEAN), a non-governmental organization (NGO), was tasked by CN-REDD to conduct consultations with local communities and indigenous peoples, who asked representatives of the 19 sectors in the eight territories to participate. The consultation process is fully documented in the ERPD and the BSP.

As part of the preparation of the programmatic activities of the ERPA, a provincial workshop was organized to validate the programmatic activities document and a reminder on awareness-raising on safeguard instruments was organized in December 2024.

II. Monitoring and Reporting Requirements

1. Entities that are responsible for implementing the Safeguards Plans are adequately resourced to carry out their assigned duties and responsibilities as defined in the Safeguards Plans

1.1 Summarize the key institutional arrangements, such as decision procedures, institutional responsibilities, budgets, and monitoring arrangements that are required under the Safeguards Plans.

The implementation of environmental and social measures is subject to monitoring in order to ensure that all the mitigation measures provided for in the safeguard plans are implemented in the Improved Forested Landscape Management Project (IFLMP) that contributed to emissions reductions through the Integrated REDD+ project (PI-REDD) in the Plateau district (Component 1 of the IFLMP) and PI-REDD in Mai Ndombe (Additional Funding). During the implementation of the IFLMP project, a Gender-Based Violence (GBV) action plan was developed. In 2020, a study was conducted to map first response services for GBV and multi-sectoral support services for survivors in the province of Mai Ndombe. Community focal points have been designated to enhance the functionality of the SEA/SH sensitive management and GRM.

The Forest Investment Program Coordination unit (FIP-CU) oversees implementing both PI-REDD Plateau and PI-REDD Mai Ndombe and has dedicated safeguards staff. FIP-CU contracted two delegated Implementation Agencies (DIA). Each DIA has a dedicated specialist based in the field and assigned in the management of environmental and social safeguards. They were receiving an oversight from the FIP-CU safeguard specialist. At the field level, each agency had a base manager in each territory who relays the monitoring of environmental and social measures, including the Grievance Redress Mechanism (GRM), under the supervision of the specialist in E&S safeguards at the field level. To operationalize the GRM at the territorial level, two individuals have been designated as focal points within the Management Committee of the established Local Development Committee (LDC). One focal point handles general complaints at the LDC level, while the other, preferably a woman, serves as

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contact for sensitive complaints related to Gender-Based Violence (GBV). A budget of approximately US$900,000 has been allocated for the implementation of Environmental and Social (E&S) safeguards.

During joint monitoring missions of the FIP Coordination Unit and the Local Implementation Agency, the safeguards specialist organizes refresher training sessions with field-based safeguards specialists. Field specialists in turn replicate refresher sessions with stakeholders as needed. These refresher sessions focused on (i) monitoring the implementation of the grievance management and redress mechanism; (ii) capacity building on SEA/SH aspects and the code of good conduct; (iii) monitoring the implementation of environmental and social management instruments; and (iii) monitoring incidents and accidents. (iv) monitoring of the process of obtaining FPIC from communities, (v) monitoring of environmental and social aspects with recommendations, etc. Stakeholders trained include staff from the Delegated Implementing Agencies and members of the Local Development Committees. Table 1 below summarizes the trainings conducted.

Table 1. Summary of Trainings Held

Project ID	Date	Location / Province Territories	Male	Female	Total	Topic	Area of Concern
1	March 2021	Inongo	70	23	93	Training on Social and Environmental Screening	Environmental and Social Safeguards
2	March 2021	Kutu	29	15	44	Training on the different steps and process of complaints	GRM
3	May 2021	Kiri	22	5	27	Training on GBV and SEA/SH	GRM sensitive to SEA/HSVBG
4	May-June 2021	Inongo, Oswhe, Kutu, Kiri	79	25	104	Capacity building in GBV risk management and support for the organization of community awareness raising activities on GBV issues, including SEA/SH	Gender-responsive GRM
5	November 2021	Oswhe	20	6	26	Training on monitoring E&S measures in the land use planning process	Environmental and Social Safeguards and Land Use Planning
6	February 2021	Inongo, Oswhe, Kutu, Kiri	160	68		Training of nursery managers on plastic waste and monitoring of	Forestry and waste management

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						nursery activities.	
7	November 21	Kiri, Oswhe	149	20	169	Application of FPIC procedures and participatory forest demarcation procedures	Land Use Planning and FPIC
8	January-March 2022	Inongo, Oswhe, Kutu, Kiri	230	100	430	Training on Health, Safety and Environment measures as well as COVID	Health, Safety, Environment
9	April, May 2022	Inongo, Oswhe, Kiri	500	150	650	Capacity building for an assessment of E&S concerns and the FPIC process with local communities and indigenous peoples	FPIC and land use planning
10.	November and December 2022	Inongo, Oswhe, Kiri, Kutu	801	450	1251	Training on the management of plastic bags on plantations	Agriculture and waste management
Total			**1939**	**819**	**2630**		

During the 2021–2022 monitoring period, stakeholder engagement and environmental and social safeguards trainings were systematically carried out as sequenced, interconnected activities directly supporting the ER Program's implementation. A structured "cascade of training" was deployed between February 2021 and December 2022, covering ten major thematic areas including social and environmental screening (93 participants), Grievance Redress Mechanism (GRM) procedures — including specialized Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) training — Health, Safety and Environment protocols (430 participants), FPIC procedures for land use planning (819 participants), and waste management. These trainings were not isolated capacity-building exercises but directly enabled field-level ER Program activities, including participatory land use planning through Simple Land Use Plans (SLUPs), establishment of Performance-Based Incentive mechanisms across 635 Local Development Committees (CLDs), and agroforestry plantation development across Mai-Ndombe and Plateau provinces — building directly on the safeguards systems established under the predecessor IFLMP project (P128887), which had engaged over 198,000 consultation participants by project close.

1.2 Confirm whether the institutional arrangements summarized above have been put in place.

Certification of routine data generated by the monitoring and evaluation system takes place at both the Local Implementing Agencies and the FIP-CU. Regular validation meetings were held between monitoring and evaluation experts from the FIP-CU and those from the local implementing agencies to verify and validate the data before submitting the report to the World Bank.

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In addition, during the joint monitoring and evaluation missions, as well as the georeferencing (GIS - Geographic Information System) of environmental and social safeguard activities and missions, the teams of the FIP-CU and the agencies implementing conducted quality assurance exercises to verify and validate the data reported across the various project progress reports. These reports included environmental and social screening missions, E&S instrument implementation missions, and mass awareness-raising missions on GBV aspects. It also comprises the launch of the Grievance Redress Mechanism (GRM) in the Tumba Ledima Natural Reserve (RNTL), mission relating to the monitoring of the implementation of environmental and social measures at the construction sites of Kutu, Owshe, Inongo and Kutu, governor's engagement mission with stakeholders on project activities, among others. The mission summary reports are presented below.

- The awareness-raising mission and the official launch of the Grievance Redress Mechanism and training of ICCN staff on socio-environmental safeguards were carried out from May 22 to June 5, 2021 in the RNTL. The objective was to proceed with the official launch of the GRM and the deployment of the E&S monitoring system. It was also a question of taking stock of environmental and social safeguard aspects, setting up the system for monitoring socio-environmental safeguards, training ICCN/RNTL staff, especially ecoguards, in the World Bank's operational environmental and social policies and the FIP framework instruments. During this mission, all field staff signed the Code of Good Conduct. Additionally, an environmental and social assessment was conducted across the two identified construction sites, with a view to potentially developing a dedicated instrument to manage environmental and social impacts. During the mission, a COVID-19 awareness session was also conducted, and all activities were carried out in compliance with applicable health and safety measures.
- For the May 12-June 2, 2021 mission, a consultant was hired to support the project with the implementation of the SEA/SH action plan, training focal points, and capacity building for local organizations. During this mission, training was provided on GBV risks, identification of focal points within the CLDs, and support for the organization of community awareness-raising activities on GBV aspects, including SEA/SH, in the four territories covered by the PIREDD Mai Ndombe.
- The joint quality mission with the Provincial Government of the Mai Ndombe and monitoring the implementation of E&S measures at the construction sites to host the PIREDD MDN bases in Kiri, Kutu, Inongo and Oswhe and the implementation of the E&S measures of the PIREDD MND from February 24 to March 27, 2021, aimed to (i) determine the degree of compliance of the construction sites of offices in the three territories with national regulations as well as with the World Bank's environmental and social safeguard policies; (ii) establish the level of environmental and social performance and conduct a detailed analysis of instances of environmental and social non-compliance with all applicable legislation; (iii) propose corrective measures for the environmental and social non-compliance identified, along with an implementation action plan. It was also a question of (i) working with the Mai-Ndombe authorities to officially confirm the closure of the four unclosed complaints from the PIREDD Plateau (FIP Grant); (ii) monitoring the implementation of the Grievance Redress Mechanism; (iii) monitoring the implementation of the Indigenous Peoples Plan and (iv) monitoring the implementation of the GBV Plan.

All of these missions were aimed at ensuring that the activities were implemented in accordance with the guidelines in the project document. These missions resulted in a set of recommendations to improve the implementation of activities on the ground. Practically, prior to the implementation of activities, the project actively organized community consultations and sensitization efforts through FPIC to ensure that community views were taken into account. The various consultations and information sessions were organized in the territories of the Mai-Ndombe district within the framework of the PIREDD Mai-Ndombe to facilitate participatory land use planning and defining priority activities with communities. These various awareness-raising and consultation activities

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enabled communities to better understand the project, freely accept the implementation of activities in their territories, accept the structuring of communities as CLDs, and agree to draw up and produce Simple Development Plans (PSA) for their territories.

The figures below illustrate the spatial distribution of the 480 Local Development Committees (CLDs) established and consolidated in Mai-Ndombe, and the 215 established in the Plateau as documented during the performance measurement exercise conducted in accordance with the FPIC process. The Free, Prior and Informed Consent (FPIC) process was systematically implemented across all project territories in both the Plateau District and Mai-Ndombe Province, in accordance with DRC's national FPIC guidelines developed under its REDD+ framework. The process encompassed participatory community consultations prior to the launch of any field activity, including participatory resource mapping and the development of Simple Land Use Plans (SLUPs) with Local Development Committees (CLDs) — 215 in Plateau and 480 in Mai-Ndombe. FPIC compliance was formally documented through signed consultation minutes, acceptance reports validated by consensus, and mission reports. Between April and May 2022 alone, FPIC training and assessment missions reached 650 participants across Inongo, Oshwe, and Kiri. Community concerns — most notably regarding the 2% benefit allocation to Indigenous Peoples and Local Communities (IPLCs) in the BSP — were addressed through clarification sessions facilitated by the IP network REPALEF.

Figure 1: Local Development Committees (CLDs) established in the territories following FPIC in the Mai-Ndombe district

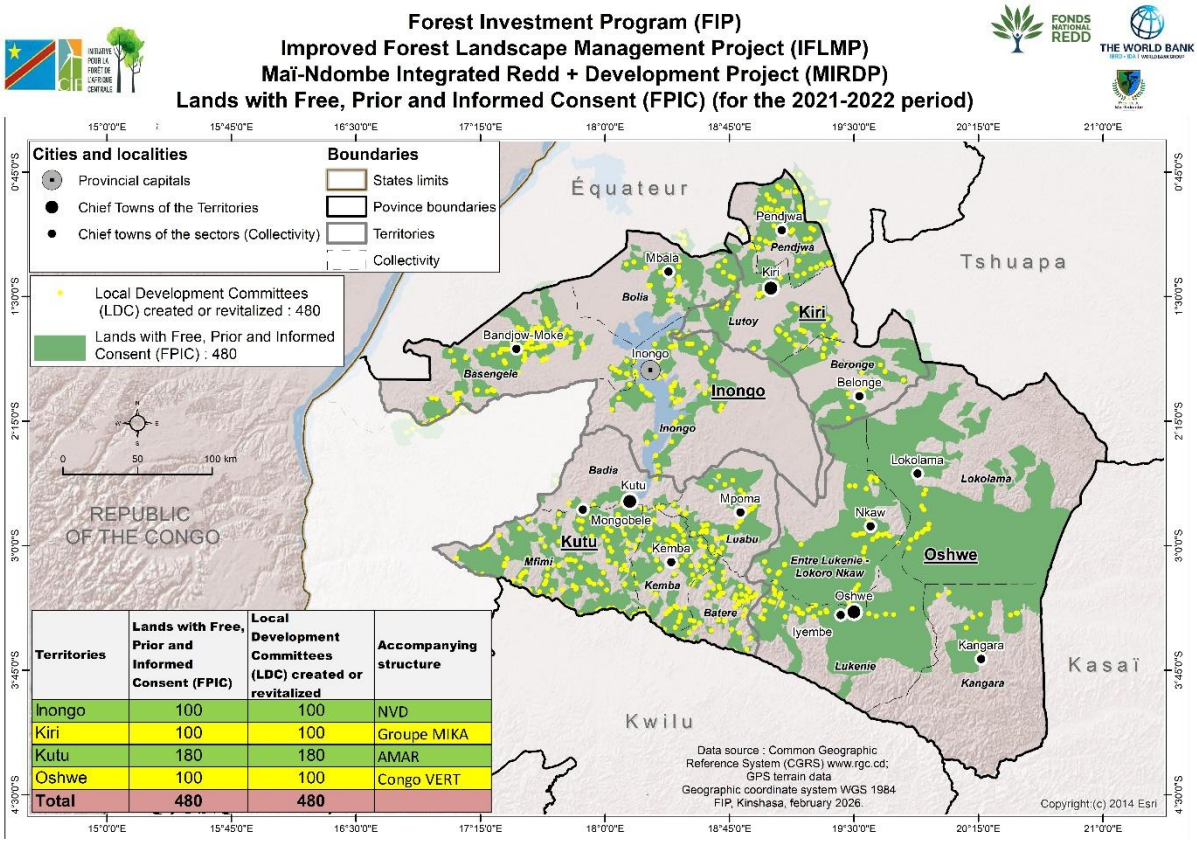

Figure 2: Local Development Committees (CLDs) established in the territories following FPIC in the District of Plateau

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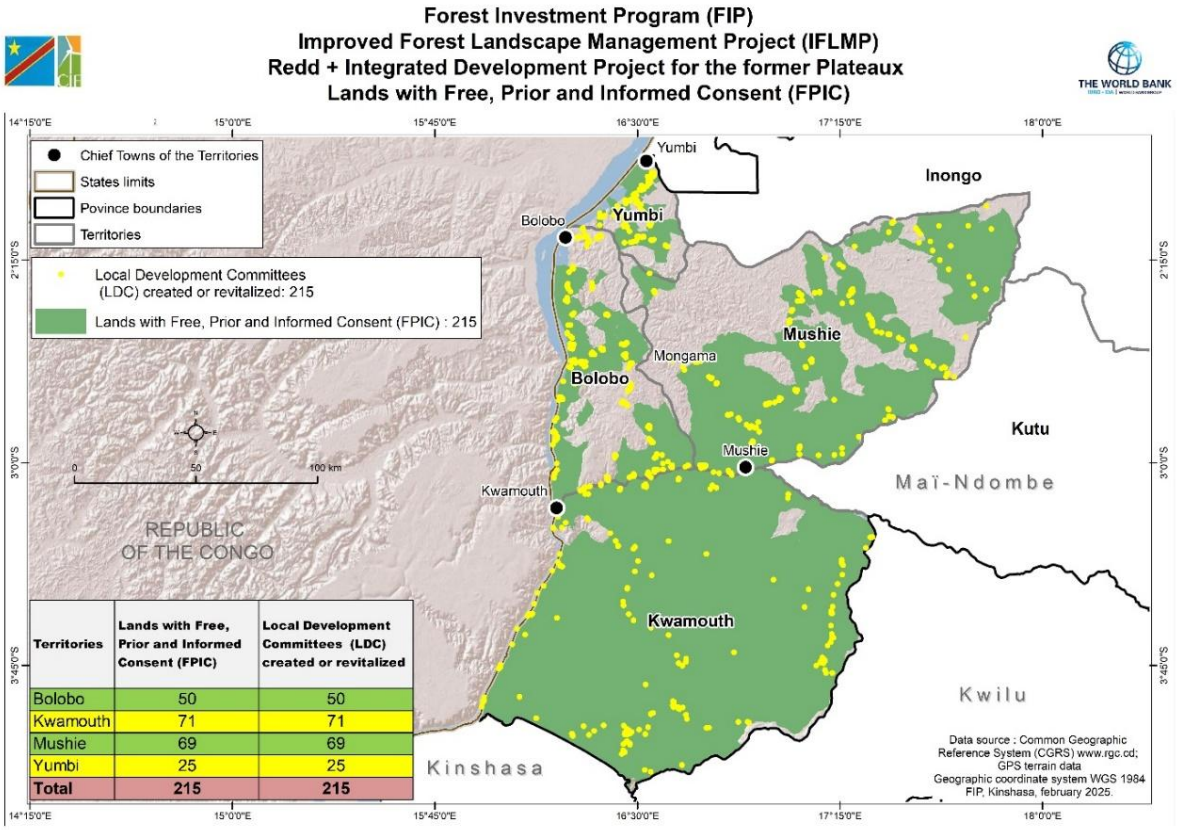

Territories	Lands with Free, Prior and Informed Consent (FPIC)	Local Development Committees (LDC) created or revitalized
Bolobo	50	50
Kwamouth	71	71
Mushie	69	69
Yumbi	25	25
Total	**215**	**215**

1.3 Confirm that implementing entities and stakeholders understand their respective roles; Have the technical capacity to carry out their responsibilities; and have adequate human and financial resources.

The Environmental and Social Management Framework (ESMF) clearly defines roles and responsibilities for implementation and monitoring. For the ERPA, the institutional arrangements follow the provisions of the BSP. At the national level, the FONAREDD Steering Committee (COPIL) has been created and has a project oversight function. For ER-P payments, a designated account for the funds is opened by the Ministry of Finance in a commercial bank, and the FIP-CU is responsible for channeling ER-P payments to beneficiaries in accordance with the BSP. A subsidiary agreement has been signed between the Commercial Bank and the Ministry of Finance to facilitate the flow of funds and disbursement to beneficiaries for the execution of program activities in real time. Fiduciary risk mitigation measures have been put in place (the quarterly fiduciary review mission by the World Bank and the annual external audit exercise of the FIP-CU) and the specific needs of the ER-P are subject the procedures detailed in the ER-P Procedures Manual. In addition, the project works in close coordination with the Executive Secretariat of FONAREDD to ensure the continuous improvement of national REDD+ tools. The FIP-CU, which acts as the Program Management Unit, is responsible for guiding and ensuring compliance with safeguard requirements for the ER Program. The FIP-CU, through its Social and Environmental Risk Management team, is therefore responsible for supporting beneficiaries to ensure that all activities are in compliance with the ERP's social and environmental safeguards plans.

At the provincial level, a Provincial Steering Committee for the Mai-Ndombe ERP has been established. The committee has the following specific tasks:

Relay decisions and orientations from the National REDD+ Fund (FONAREDD) Steering Committee relating to the oversight and monitoring-evaluation of Programme implementation activities.

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- Monitor the implementation of the Benefits Sharing Plan under the ERPA across the entire territory of Maï-Ndombe Province.
- Ensure that information on Programme activities is disseminated to all stakeholders and target groups, particularly Civil Society and the Private Sector, including representatives of Indigenous Pygmy Peoples and local communities, designated representatives of the relevant Decentralized Territorial Entities (ETDs), and Provincial Authorities.
- Ensure the proper functioning of the Programme.
- Ensure the achievement of objectives of the programmatic activities carried out.
- Contribute to the proper functioning of the Grievance and Redress Management Mechanism, including the resolution of grievances and complaint or dispute handling procedures at each COPIL session.

The project is managed by MEDD-NEC, with its FIP Coordination Unit (FIP-CU) serving as the primary coordinating body for implementation. Since 2015, FIP-CU has been involved in a range of World Bank-funded environmental projects, including the Integrated Forest and Landscape Management Project (IFLMP, P128887), the Maï-Ndombe Emission Reduction Program (P160320), OPERPA (P170835), and FOREST (P178642).
Over this period (2021-2022), FIP-CU has built a solid technical track record in community and private sector agroforestry, land use planning, and carbon finance, as well as extensive experience working with a diverse range of operators, from community groups and NGOs to commercial firms, under various contractual arrangements, including delegated management contracts.
To strengthen its core ERPA management functions, FIP-CU has established a dedicated provincial team comprising an ERPA focal point, three agroforesters, two environmental and social risk management officers, an expert in geographic information systems and land use planning, one communications assistant, two drivers, and two sailors for boat operations. This team ensures close monitoring of the Benefit Sharing Plan implementation and serves as a catalyst for the Grievance and Redress Mechanism (GRM). At the central level, staff contribute shared time to overall coordination, procurement, financial management, monitoring and evaluation, gender-based violence (GBV) activities and oversight on environmental and social risk management.

1.4 Where specific capacity building measures (e.g. training and professional development) have been required by the ER Program or Safeguards Plans, describe the extent to which such measures have been implemented.

As described in Section 1.1, during the implementation of activities and during supervision - missions, a cascade of training was deployed to give as much practical experience as possible on environmental and social issues.

2. The activities of the ER Program shall be implemented in accordance with the management and mitigation measures specified in the Safeguards Plans.

2.1 Confirm that the environmental and social documents prepared during Program implementation are based on the Safeguards Plans. Provide information on their scope, key mitigation measures specified in the plans, whether plans are prepared in a timely manner, and whether disclosure and consultation on plans are carried out in accordance with agreed measures.

In accordance with the environmental and social safeguard instruments, developed under the predecessor Improved Forested Landscape Management Project (IFLMP, P128887) with World Bank financing, the program has put in place: Indigenous Peoples Plans, Pesticide Management Plans,

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Environmental and Social Management Plans, and Grievance Mechanisms — all shared with stakeholders prior to implementation.

The program's environmental and social risk management framework goes beyond the mere identification of risks and mitigation measures to encompass a structured set of ground-level activities with documented outcomes, implemented continuously throughout the REDD+ investment phase covering the 2021–2022 monitoring period. Underlying activities include participatory land use planning through Simple Land Use Plans (SLUPs), site selection and demarcation for nurseries and reforestation plots, agroforestry training, and community outreach. In practice, risks such as land conflict, biodiversity loss, gender-based violence, and social exclusion were addressed through the systematic application of the Free, Prior and Informed Consent (FPIC) framework, the enforcement of a Code of Conduct for all field staff, and targeted capacity-building interventions — building directly on the foundational experience in community-based landscape management established by the IFLMP in DRC. Where risks materialized — including occupational safety incidents during nursery establishment and grievances related to land demarcation — they were documented, resolved through the Grievance Redress Mechanism (GRM), and reported transparently, ensuring accountability throughout implementation.

Table 2. Overview of Mitigation Measures, Related Activities and Outcomes

Environmental and Social Measures	**Activities**	**Time period**	**Outcomes**
Environmental and Social Screening	Activity selection and implementation (nursery site selection and creation, planting site selection, enclosure site selection)	Continuous	Reduced risks of land conflict, forced displacement, and biodiversity loss
Use of the Activity Exclusion List: • Ensure that the selected site is not located in proximity to key biodiversity areas, protected areas under the Convention on Biological Diversity. • Confirm that the project does not have a high environmental impact. • Avoid using banned agrochemicals.	Demarcation of enclosures, establishment of agroforestry plantations	Annually prior to the start of planting activities	• Biodiversity and protected area risks mitigated and compliance with national and international requirements: • Adoption of environmentally friendly agroforestry practices and establishment of plantations
Community Outreach and Mobilization	Training on agroforestry and sustainable land management practices	Year-round	Community engagement and best practices adopted
Sensitization of the population on the Grievance Redress Mechanism (GRM)	All project activities	Continuous	Community and stakeholder grievances documented and resolved

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Environmental and Social Measures	Activities	Time period	Outcomes
Provision and training on personal protective equipment (PPE)	Nursery preparation, soil preparation, and establishment of plantations	Continuous	Occupational accidents and injuries averted and reduced
Community consultations within the framework of Free, Prior and Informed Consent (FPIC)	• Identification of the beneficiary community • Participatory Resource Mapping • Development of Simple Land Use Plans (SLUP)	Continuous	Communities are fully aware, well informed, and their views are actively taken into account in decision-making processes.
Selection of adapted species, agroecological practices and degraded savanna zone	• Species selection and species-site correspondence • Types of reforestation activities (monoculture, mixed plantation) • Tree seed management	Quarterly	Improved forest cover and crop productivity
• Training courses on waste management, waste management safety, sustainable materials management and waste sorting • Prevention of Dispersion and Leakage in Temporary Storage and Parking • Benefits of Biodegradable Plastic Bags	• Plastic waste from plantations • Vehicle maintenance waste • Fuel storage (for motorcycle, vehicle, tractor, generator)	Ongoing: Nursery preparation period, while vehicles are parked and maintained, fuel stock is replenished	• Significant reduction in the amount of waste going to landfill • The harmful effects of waste on the environment and human health have been significantly reduced
Verification of the quality of food seeds and plant material	Purchase of food seeds and planting material for agroforestry associations	Before each rainy season	• Improved agricultural productivity through readily available climate-resilient seeds and planting material
• Signing of the code of conduct • Ensuring ethical and socially responsible production	All project activities	Continuous	• The rights of local communities and workers are effectively protected and respected • Stakeholders demonstrate strong commitment to

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Environmental and Social Measures	Activities	Time period	Outcomes
			comply with measures to address GBV/SEA/SH
Standards for good agricultural and environmental land conditions	• Risk of introduction of unauthorized GMOs • Risk of excessive use of chemical fertilizers • No burning on arable land • Tillage and other appropriate techniques to reduce the risk of land degradation	Continuous	• Environmentally friendly agricultural practices are widely promoted and adopted. • The procedures outlined in the Pest and Pesticide Management Plan are fully complied with
• Facilitating the recruitment of local implementing agencies • Good representation of local community in recruitment • Training in agroforestry techniques and sustainable management • Dissemination via local authorities, community radios	• Recruitment of entities to implement activities • Implementation of project activities in selected areas • Advertise jobs locally	Continuous	• Inclusion fostered and new opportunities created for local communities. • Significantly strengthened technical and professional capacity • The local economy is stimulated and ownership of the project by stakeholders.
Representation of minorities and vulnerable groups on the board of directors of the Local Development Committees (CLD)	• Activity of structuring communities and organizing community initiatives to achieve common objectives • LDC management committee established and established	Continuous	• Minorities and vulnerable groups actively participate in relevant initiatives and decision-making processes. • Social inclusion and respect fostered in the community
• Production of an Indigenous Peoples Development Plan • Consultation and prioritization of IP activities	Implementation of the Indigenous Peoples Planning Framework	Prior to implementation of activities in areas inhabited by Indigenous Peoples	Engagement with indigenous peoples is carefully considered and integrated into relevant processes and initiatives.

2.2 Confirm if the entities responsible for implementing the safeguards plans maintain consistent and complete records of ER Program activities, such as records of administrative approvals, licenses, permits, documentation of public consultations, community agreements, records of the screening process, due diligence assessments, and records of addressing complaints and feedback under the framework of the Grievance and Redress Mechanism (GRM).

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Routine data verification is performed at the level of the Delegated Implementing Agencies and/or the Local Executing Agencies (ALEs) and at the PMU level through the management system of the program's monitoring and evaluation mechanism. Regular validation meetings were held between monitoring and evaluation experts from the PMU and those from the implementing agencies to verify and validate the data before the report was submitted. The FIP Coordination Unit submits quarterly reports to the Bank. The online complaints register is also regularly updated (https://shorturl.at/cVYj6 and https://shorturl.at/FJGjD)

2.3 Summarize the extent to which the environmental and social management measures set out in the Safeguards Plans and any subsequent plans prepared during Program implementation are effectively implemented, the quality of stakeholder engagement, and whether monitoring and supervision arrangements are in place on the ground.

All activities, including those related to FPIC consultations, have been subjected to Environmental and Social (E&S) screening based on environmental and social safeguards to ensure the proper implementation of measures to address environmental and social concerns prior to the commencement of any activity. In addition, the Project Implementation Manual (PIM), in its chapter on environmental and social management, provides detailed guidelines for the effective implementation of the measures outlined in the instruments.

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Review of environmental and social risk table, including mitigation measures

Social and Environmental Risks	Completeness	Provisions
Land conflicts: issues related to access and tenure rights	Yes	▪ Secure land tenure prior to site selection: Ensure selected sites secure land tenure through participatory land mapping and contractual agreements with communities, with support from Local Development Committees (LDCs). ▪ Use of local dispute resolution mechanisms: use local mechanisms for managing and resolving land disputes to maintain harmony and equity. ▪ Involvement of traditional leaders and local authorities: Involve traditional leaders and local authorities in the site selection process and provision of land for project activities to ensure cultural and administrative alignment. ▪ Development and strengthening of land mediation bodies: Establish or strengthen local land mediation bodies, such as village reconciliation commissions, to clarify land rights and resolve disputes. ▪ Regular intercommunity meetings: Organize regular meetings between communities to ensure transparency and equity in land allocation for agroforestry projects
Risk of water-induced soil erosion and soil degradation	Yes	▪ Reduce mechanization on slopes: prevent soil erosion and degradation. ▪ Tree Contour Planting: Promote tree planting along contour lines to improve soil stability. ▪ Sensitization of local communities on land management: conduct awareness campaigns to raise awareness of effective land management practices and risks associated with erosion
Chemical Pollution from Agricultural Inputs: Contamination of Soil and Water by Chemical Pesticides, Herbicides and Fertilizers	Yes	▪ Encourage biological pest control and fertilization: Advocate for the use of organic inputs for pest control and fertilization to promote environmentally friendly agricultural practices. ▪ Use registered products: Ensure that only products are used that are approved by FAO/WHO with complete safety guidelines to protect users and the environment. ▪ Training of users on safe application of products: Provide training to users on safe application of products, focusing on best practices and safety measures. ▪ Ensure Personal Protective Equipment (PPE) availability: Ensure the availability of essential PPE, including masks, gloves, and boots, to protect users when applying the product. ▪ Develop and implement a management plan for remaining inputs, including consignment and controlled disposal, as part of the pesticide management plan to minimize environmental impact.
Plastic waste management: Challenges posed by uncollected, dispersed or incinerated nursery bags	Yes	▪ Use of biodegradable bags in nurseries: Implement the use of biodegradable bags in nurseries to reduce environmental impact and promote sustainability. ▪ Training on bag management and reuse: Train nursery staff and community members on effective management and systematic collection of biodegradable plastic bags for reuse.

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		▪ Fixed collection points: Set up fixed collection points at each site to facilitate the collection and recycling of biodegradable bags. ▪ Plastic sorting and impact awareness campaign: Conduct awareness campaigns to educate communities on the importance of plastic sorting and understand its impact on the environment.
Occupational health and safety: construction and transport accidents involving machinery and vehicles, as well as the risk of communicable diseases such as HIV/AIDS and malaria among workers and communities	Yes	▪ Regular Vehicle Inspections: Conduct regular maintenance and technical inspections of vehicles and maintain detailed records to ensure operational safety and effectiveness. ▪ Ensure comprehensive insurance coverage: ensure vehicles are insured and workers have access to health insurance to protect against unforeseen events. ▪ Risk Awareness and Prevention: Raise awareness of work-related risks and implement preventive measures to improve workplace safety. ▪ Security and safety training: Conduct safety and security training sessions to equip workers with the knowledge and skills to manage potential hazards. ▪ Health Awareness Campaigns: Organize awareness campaigns on communicable diseases, STIs/HIV, and malaria to promote community health and well-being. ▪ Availability of Medical First Aid Kits: Ensure that medical first aid kits are readily available to address any immediate or urgent health needs.
Inequitable access to project resources: elite or privileged group dominance	Yes	▪ Establishment of Local Development Committees (LDCs): Establish LSCs to facilitate participatory land use planning and ensure equitable distribution of benefits from project activities. ▪ Transparent Benefit Sharing: Implement transparent benefit sharing across different geographies, including area quotas and equipment allocation, to ensure equity and inclusion. ▪ Community Driven Project Activities: Involving community members in activities such as establishment of nurseries and plantations, organized around LDCs, to collectively benefit from project-provided incentives and investments.
Persistent land and community conflicts: tensions around land access and use	Yes	▪ Establishment and strengthening of local land mediation bodies: Establish or strengthen village conciliation commissions to facilitate effective land dispute resolution and mediation. ▪ Facilitation of regular intercommunity meetings: Organize regular meetings between communities to foster dialogue, cooperation and mutual understanding. ▪ Ensure transparency in land allocation: implement transparent land allocation processes to build trust and accountability among stakeholders. ▪ Participatory Community Mapping: Engage communities in participatory mapping exercises, involving customary authorities throughout the process to ensure cultural relevance and inclusivity.
Fire Risk	Yes	▪ Purchase and installation of fire extinguishers: Purchase and install fire extinguishers in office spaces to improve safety and readiness. ▪ Sandbox deployment: Implement sandboxes as an additional fire safety measure.

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		▪ Creation of fire breaks and use of prescribed burns: Establish fire breaks and conduct prescribed burns as necessary to effectively prevent and manage potential fire hazards.
Lack of participation of local communities: participation challenges, including low participation in planning and implementation, lack of interest in agroforestry activities, feeling of exclusion, and low ownership of results.	Yes	▪ Obtaining FPIC: Engage beneficiaries in consultations and information sessions to obtain their informed consent and participation. ▪ Community awareness campaigns: Conduct regular campaigns and continuous and tailored communication using community radios, local posters, and village meetings to inform communities about the objectives, benefits, and role of the project. ▪ Inclusive planning and participation: Actively involve communities from the planning stage, ensuring that they are involved in site identification, species selection, and adoption of appropriate agroforestry approaches. Use participatory tools such as community maps, suggestion boxes, and focus groups to identify community priorities. ▪ Development and implementation of a grievance mechanism to address concerns and complaints ▪ Formalize partnerships: Sign collaboration protocols with relevant partners to strengthen cooperation and support project objectives.
Harassment and Sexual Exploitation and Abuse (SEA/SH) at Workplaces, Particularly in Mobilization Sites and on Plantations	Yes	▪ Awareness and commitment to the Code of Conduct: Conduct awareness sessions and ensure that all individuals sign the Code of Conduct to affirm their understanding and commitment. ▪ Regulatory Visibility: Display rules and guidelines prominently on the website. ▪ Immediate Sanctions: Take prompt disciplinary action for violations to enforce standards and deter misconduct. ▪ Prevention training for staff: Provide comprehensive training to staff on preventing sexual harassment and exploitation and promoting a safe and respectful work environment.
Unresolved community grievances: issues related to benefit sharing, working conditions	Yes	▪ Establishment of focal points in LDCs: Ensure dedicated representatives to respond to local needs and facilitate communication. ▪ Comprehensive Grievance Management: Establish a system for recording and continuously tracking all grievances to ensure timely resolution
Social exclusion and inequalities: Marginalization of women, youth and minorities in project governance	Yes	▪ Implementation of social inclusion strategies: Ensure that quotas for women and youth participation are respected during information sessions, training programs, and awareness-raising activities. ▪ Representation of men and women in management positions: make the inclusion of women in management committees mandatory at the level of Community Governance Development (DGC). ▪ Inclusive decision-making on incentives: require women's participation in household-level decisions on the allocation of project incentives. ▪ Community participation in site selection: Mandatory involvement of women and youth in the selection of community sites for plantation development.

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2.4 Confirm that the MGPR is operational, supported by evidence that the MGPR tracks and documents complaints, and responds to concerns, complaints, or grievances.

The IFLP has set up a GRM in Mai-Ndombe. This GRM was developed in line with the national REDD+ process and became fully operational after an implementation phase that began in July 2017. To facilitate the launch, a total of six workshops were organized through the Rural Agricultural Management Councils (CARGs). These workshops were attended by more than 300 people from local structures, local development committees (CLDs), deconcentrated technical services, land chiefs, and civil society.

At the end of the workshops, participants received pre-established complaint registration and appeal forms available in French and local languages. In addition, several radio and television programs were organized with local political and administrative authorities, opinion leaders and technical departments (Environment, Rural Development, Agriculture) to raise public awareness of the GRM. The Grievance Mechanism. The grievance redress mechanism (GRM) is fully operational was updated in January 2022 and April 2025 and the registry is made public (https://www.ucpif.cd/images/medias/VF_MGP_PRE-CAVRE_PIF-CU.pdf). All complaints are documented and all concerns raised have been addressed.
Complaints can be submitted at:

- plaintesrecours.pif@gmail.com
- FIP Coordination Unit
- Local Implementing Agencies (ALEs)
- Local Development Committees (CLDs) or Rural Agricultural Management Councils (CARG) at the local level.

The table below illustrates the number of complaints received by project:

Time period	Number of complaints per project		
	PIREDD MND with the GEF funding	PIREDD Mai-Ndombe with CAFI funding	Total
Q1, 2021	0	4	4
Q2, 2021	0	5	5
Q3, 2021	0	21	21
Q4 2021	0	2	2
Q1, 2022	2	8	10
Q2, 2022	5	24	29
Q3, 2022	5	0	5
Q4, 2022	0	1	1
Total	12	65	77

During the years (2021-2022) of the PIREDD Mai-Ndombe (CAFI and GEF), a total of 77 complaints were received at the various points of contact set up by the project. Of these, 76 cases were satisfactorily addressed. The various complaints received related to delays in payment of environmental services by certain beneficiaries, broadcasting rights by certain local radio stations, protests by certain rights holders regarding certain fees resulting from payments for environmental services at the grassland level, the low rate of transportation of workshop participants, and the non-validation of Natural Resource Management Plan (NRMPs) for political reasons, and inheritance disputes, destruction of plantations by stray animals, maintenance claims not provided for in the contract.

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It should be noted that during the period under review, the four unaddressed complaints related to the PIREDD Plateau (project component closed in December 2019) related to the refusal to validate the Natural Resources Management Plan (PGRN) in the Bolobo territory, [30] A joint FIP-CU, LIA and civil society mission had been dispatched to Bolobo to understand the reasons for the communities' refusal to validate the said NRMPs, and referred the matter to the Provincial Steering Committee for a decision that was resolved during the 2021 period.

The FGRM was updated in June 2021 in response to a review and feedback from the World Bank that aimed to enable it to cover the whole Mai-Ndombe ER Program zone. In the context of ERPA activities, the FGRM has been updated in April 2025 to: i) integrate specific FGRMs in all projects nested in the ER Program; and ii) register and document grievances and response measures at national REDD+ FGRM level once the National REDD+ Registry is online. FGRM operationalization and implementation at national level will also be supported by the Support to the operationalization of the Emission Reductions Payment Agreement under the Maï-Ndombe ER Programme (OPERPA) project. FIP-CU will be responsible for the daily monitoring of ER Program implementation..

3. The objectives and expected outcomes of the Safeguards Plans have been achieved

3.1 Assess the overall effectiveness of the management and mitigation measures set out in the Safeguards Plans.

Most of the monitoring missions conducted by the World Bank's Project Coordination and Supervision Units indicated that emission reduction activities implemented in the program area through the PI-REDD Mai-Ndombe projects (CAFI and GEF) complied with environmental and social safeguards. No major outstanding issues were flagged.

3.2 Are quality assurance, monitoring and supervision arrangements effective in identifying and addressing deficiencies in cases where ER Program activities are not implemented in accordance with the Safeguards Plans?

The following quality assurance mechanism was in place as part of the FMPMP:

- **Monitoring system**: As part of the implementation of the Forest Investment Program activities, a project monitoring and evaluation manual was prepared and validated. This manual describes: (i) how results will be measured, (ii) how monitoring reports are produced, and (iii) how evaluations are conducted. The guidance contained in the manual is more strategic than operational. In order to consolidate the achievements of the various initiatives, it was decided to produce a manual of operational procedures for monitoring and evaluation in order to inform and guide the various actors involved at the grassroots level in the production of strategic information, on the operating procedures to be used in the exercise of their missions. The operational procedures contained in this manual can be adapted to the different types of projects to be implemented by the UC-FIP.

3.3 Describe the oversight and control arrangements to ensure the implementation of the Safeguards Plans and, if applicable, subsequent environmental and social documents prepared during Program implementation. Are these oversight and control arrangements effective (e.g., providing an effective feedback mechanism to implementing entities to enable corrective actions to be taken)?

[30] Bolobo Territory is an administrative region of Mai-Ndombe Province in the Democratic Republic of Congo. The county seat is the city of Bolobo. The territory is located on the east bank of the Congo River, opposite the Republic of Congo.

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- **Quality assurance:** Certification of routine data generated by the M&E system is done at both ALE and FIP-CU levels. Validation meetings were held on a regular basis between the experts in charge of monitoring and evaluation at the FIP-CU and those from the ALE to validate the data before the report was submitted.
- **Field Visits: In addition** to the FIP Coordination Unit's review of the reports produced by the ALEs, combined M&E, MIS, and safeguard missions were carried out to ensure that activities were implemented in line with the approaches outlined in the project document. These missions resulted in a matrix of recommendations to be observed to improve the implementation of activities on the ground. The FIP-CU experts also took advantage of these moments to gather feedback from project beneficiaries on how the activities were being carried out and to exchange with local authorities.

4 Program activities present new environmental and social risks and impacts not identified or anticipated in the safeguards plans prepared prior to ERPA signature.

4.1 Is the extent of potential risks and impacts identified during the SESA process still relevant to the ER Program activities?

The risks and impacts identified by the SESA for the retroactive period shall be those previously identified in the Safeguard Plans. With the exception of risks related to contamination from the COVID-19 pandemic, which were not identified during the development of the safeguard instruments.

4.2 During implementation, have any ER Program activities generated risks or impacts that were not previously identified in the safeguard plans developed prior to ERPA signature? If so, what are the proposed measures to manage these risks and impacts that were not considered before?

The safeguard instruments of the IFLMP were prepared in 2014 and revised in 2017. All frameworks have been further updated to reflect additional financing for the Mai-Ndombe PI-REDD indicator. Additional consultations were held in Kinshasa during a workshop in November 2018 with key stakeholders. Further community consultations were held throughout project implementation. Two of the social frameworks have been substantially updated. The framework of the process has been adapted to take into account the specific problems of the Tumba Lediima Nature Reserve. Similarly, the Indigenous Peoples Plan was updated to reflect additional funding for indigenous peoples. However, due to additional AF activities for the Mai Ndombe PI-REDD indicator, the existing safeguard documents (ESMF, RPF, PF, PPA and IPMF) were updated and redisclosed in-country and by the World Bank (in January and February 2019). A consultant was hired to update the various instruments. REPALEF was tasked with conducting the consultations on the ground and assisting in the production of the updated report. The consultations were conducted in the PIREDD Mai-Ndombe territories. To reflect these changes, the Integrated Safeguards Data Sheet (ISDS) was also updated and reissued. To date, the safeguard instruments are being revised to focus on investments that can only be financed by the CAVRE under the ER-P framework.

5. Corrective measures and improvements needed to increase the effectiveness of the Safeguards Plans.

5.1 Provide a self-assessment of overall implementation of the safeguards plans

Overall, the safeguards plans were implemented during the period considered "satisfactory" and no major social or environmental concerns were raised (see details in Annex 1, Table 2). The basic elements were related to the availability of reports on the implementation of the instruments at the

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level of the delegated implementing agency, the number of complaints received and processed, the major incidents/accidents observed during the implementation of the activities, the availability of the specialist within the delegated implementing agency, Environmental and social provisions in the signed contract (these provisions typically include details on environmental assessments, stakeholder engagement, mitigation measures, compliance with relevant laws, and reporting requirements for monitoring environmental and social performance), etc.
The safeguards rating of 'satisfactory' for the 2021–2022 monitoring period reflects concrete, documented evidence of risk identification, mitigation, and management across all project activities. Environmental and social risks — including land conflicts, biodiversity loss, chemical pollution, occupational safety hazards, gender-based violence, and social exclusion — were systematically identified through environmental and social screening tools and an activity exclusion list applied at site selection and implementation stages. Mitigation measures were operationalized through multiple instruments: participatory land mapping and involvement of traditional leaders and village reconciliation commissions to manage tenure conflicts; mandatory use of Personal Protective Equipment (PPE) and Health, Safety and Environment training for occupational risks; biodegradable materials and biological pest control protocols for environmental risks; and gender quotas on Local Development Committees to address social exclusion. These measures build on the safeguards framework tested under the predecessor IFLMP (P128887), which recorded 232 GRM complaints — all resolved satisfactorily — and was rated Moderately Satisfactory at closure. During the 2021–2022 period, the Grievance Redress Mechanism received 77 complaints, of which 76 were resolved, demonstrating a functional and responsive accountability system.

5.2 List all corrective actions and areas requiring improvement. Care should be taken to distinguish between: (i) remedial measures to ensure compliance with the Safeguards Plans; and (ii) improvements needed to respond to unintended risks and impacts

The implementation of the safeguards plan during the reporting period was rated as "satisfactory". A few minor issues were noted related to capacity building on SEA/SH aspects, availability of reports on the implementation of the instruments at the enterprise level, and final project closure for Component 1 of the Plateaux District PAPMP. All weaknesses identified in 2021-2022 were addressed by:

- Mass sensitization of comments on SEA/SH risks;
- Involvement of the Provincial Steering Committee to handle complaints and close them;
- Operationalization of the training program for stakeholders in environmental and social management;
- Capacity building for stakeholders in environmental and social assessment, environmental and social monitoring;
- Monitoring of the operationalization of the GRM to meet the needs of the ERP;
- Monitoring awareness of safeguards instruments (ESMF, RPF, PF, IPP and IPMF)

5.3 Describe the timeline for implementing the above corrective actions and improvements.

These corrective measures will be implemented throughout the life of the ERP. The program end date is June 30, 2027.

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ANNEX 2. INFORMATION ON IMPLEMENTATION OF THE BENEFIT-SHARING PLAN

I. FCPF Requirements for Benefit Sharing Plans

The BSP Implementation Status Report is the primary tool used by the Program Entity to assess whether the BSP has been implemented in accordance with the agreed BSP, in accordance with relevant applicable laws, including national laws and any legally binding national obligations under applicable international law, and that this information is provided in a transparent manner. This requirement is specified in the FCPF Methodological Framework (Criteria 29-33) and the General Conditions for Emission Reductions Payment Agreements (ERPA), and in the ERPA itself.

The BSP Implementation Status Report should include baseline information and data that Program Entities are required to report as specified in this template. Additional information can be provided in an annex to the report depending on the specific content of the BSP. The Program Entity must submit the report six months after receiving the first payment and annually thereafter‡‡‡‡‡‡‡‡. The report will be considered valid and accepted only once all major sections of the report using this template have been completed with the relevant details.

II. BSP Implementation Status

Reporting period:	Date of submission:
2021-2022	June 2026

1. Overall fund disbursement**:**

Table 2: Summary of funds distributed by the Program Entity as per the BSP (includes advance payments)

a) Overall disbursement

Source of Funds	Total commitments (contract value) (1)	Total received by PE - Payment 1 (2)	Total received by PE – Payment 2 (3)	Total disbursed by PE (4)	% Disbursed (5) = (4)/((2)+(3))	Comments

FCPF ERPA	**55 000 000**	**19 479 010**	**14 000 000**	**6 234 553**	**19%**	As of June 2026, USD 6.2 million was distributed to the program management unit, the Maï-Ndombe Provincial Government per the BSP, and local communities. The remaining amount is scheduled to be distributed to local communities and Indigenous Peoples through Community Action Plans, with support from NGOs who were recruited as local execution agencies (ALEs) . These NGOs will support implementation of the Community Action Plans of the program document that was jointly developed and validated by all stakeholders.

b) Disbursement per category

Beneficiaries	Total profit distribution (USD)	Distribution of the first tranche (USD)	Distribution of the second tranche (USD)	Amount Paid (USD)
Operational Costs				
PMU share	2 500 000.00	973 950.50	637 000.00	1 610 950.50
Share of Provincial Government	2 000 000.00	779 160.40	509 600.00	1 217 927.00
Sub-total 1	**4 500 000.00**	**1 753 110.90**	**1 146 600.00**	**2 828 877.50**
Non-performance-based payments				
Local community share	1 010 000.00	354 517.98	**257 068.00**	
Indigenous People Share	1 010 000.00	354 517.98	**257 068.00**	
Sub-total 2	**2 020 000.00**	**709 035.96**	**514 136.00**	**-**
Performance-Based Payments				

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Integrated REDD+ Investment share for the benefit of community	48 480 000.00	17 016 863.14	12 339 264.00	1 142 057.00
Sub-total 3	**48 480 000.00**	**17 016 863.14**	**12 339 264.00**	**1 142 057.00**
Grand Total	**55 000 000.00**	**19 479 010.00**	**14 000 000.00**	**3 970 934.50**

2. BSP revision[§§§§§§§§] **:** were there any changes made to the BSP during the Reporting Period (as specified above in section II): Yes ☐ No ☒

   No changes were made during the ERMR's reporting period, however, the BSP was revised in December 2024 and published on the FCPF website. The revisions include the following: (i) updating the modalities for the transfer of funds between the World Bank and the Project Management Unit (PMU) through a commercial bank rather than through the Multi-Partner Trust Fund Office (MPTFO), and (ii) updating the funding available to the PMU for its activities beyond the last reporting period in 2025 to allow it to continue implementing and monitoring of activities.

3. Overall summary of the BSP implementation during the Reporting Period.

3.1 **Have there been any issues with the distribution of funds to beneficiaries? If so, please describe them and how they will or have been addressed.**

To date, the distribution of funds to beneficiaries has not encountered any major problems. The PMU is in the process of distributing the benefits in accordance with the Benefit Sharing Plan. However, it should be noted that under the ER Program, Local Implementing Agencies (ALEs) are central to delivering performance-based benefits to Indigenous Peoples and Local Communities (IPLCs). Their recruitment has taken time, which has delayed the start of community-level benefit distribution, which constitutes the bigger share of benefits.

PIF-CU first focused on designing the investment program for IPLCs (under performance-based payments) and consulting stakeholders at national and provincial levels. Based on these consultations, an activity program was prepared and approved, with implementation to be delegated to ALEs, that have been recruited, through a "Maîtrise d'Ouvrage Déléguée" (delegated implementation) arrangement.

Alongside the recruitment of ALEs, the PIF-CU has launched various procurement processes for equipment (vehicles, agricultural inputs, etc.) to enable the ALEs to effectively carry out their mission in the field. Some of the equipment (watering cans, bags, a motorcycle, a spade, etc.) has already been delivered to the Maï-Ndombe Province. With the ALEs now operational, resource sharing is expected to accelerate.

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Any revisions to the BSP whether major and/or minor changes should be documented in this report, and the revised BSP should be submitted to the World Bank including the FCPF Facility Management Team (FMT).

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3.2 **Are the governance and funds flow arrangements as described in the BSP and operations manuals (if relevant) functioning well? Please provide as an annex a summary of meetings, consultations with stakeholders and decisions undertaken during the Reporting Period to implement and monitor the Benefit Sharing Plan.**

The governance and financial flow arrangements are operational in line with the revised Benefit Sharing Plan and the Project Implementation Manual (PIM).
It builds on the existing mechanisms of the Improved Forest Landscape Management Project (the IFLMP), the World Bank-funded project that includes the PI-REDD Plateau and PI-REDD Maï-Ndombe operations and whose governance, safeguards, and implementation arrangements (FONAREDD, PIF-CU, COPIL, GRM, etc.) are being used as the foundation for the ER Program and its BSP. The institutions and bodies involved in implementing the IFLMP (FONAREDD, PIF-CU, COPIL) have demonstrated a clear understanding of their roles and responsibilities throughout activity implementation, both in decision-making processes and in day-to-day operations. These institutions and bodies were closely involved in the development of the BSP. Similarly, the consultations held during the finalization of the BSP also helped to strengthen the capacities of Indigenous Peoples and Local Communities (IPLCs) on the BSP's modalities.

The FIP Coordination Unit (PIF-CU), as the PMU, is responsible for planning the program's activities. It will focus on developing the skills and knowledge of stakeholders involved in the project to effectively manage and distribute benefits, ensuring equitable participation and transparent implementation, including training on project management, financial literacy, community engagement, and monitoring and evaluation techniques to ensure benefits reach the intended beneficiary. To strengthen its core ERPA management functions, PIF-CU has established a dedicated provincial team comprising an ERPA focal point, four agroforestry specialists, two environmental and social risk management officers, one communications assistant, two drivers, and two sailors for boat operations. This team ensures close monitoring of the Benefit Sharing Plan implementation and serves as a catalyst for the Grievance and Redress Mechanism (GRM). At the central level, staff contribute shared time to overall coordination, procurement, financial management, monitoring and evaluation, and gender-based violence (GBV) activities. The team based in Mai-Ndombe serves as a direct interlocutor on the BSP and supervises its implementation and monitoring. A Provincial Steering Committee has been established and oversees implementation of the BSP (link).
In terms of financial flow, a dedicated account was opened by the Ministry of Finance, managed by the PIF-CU, at a commercial bank to ensure the flow of funds. The Government signed a subsidiary agreement with the commercial bank to define the responsibilities and institutional modalities relating to the receipt and use of payments received under the ERPA. The role of the Commercial Bank under the Subsidiary Agreement is limited to receiving ERPA Payments on behalf of the Government, holding all ERPA Payments in the Special Account, and releasing funds from the Special Account on behalf of the Government for the sharing of Monetary and Non-Monetary Benefits with eligible Beneficiaries as instructed by the ERP PMU. This arrangement has been updated in the Program Implementation Manual.

Specifically for the Mai Ndombe Province, a dedicated account was opened in a commercial bank by the Province and the resources were transferred directly to this bank account. For the other two categories of beneficiaries (Indigenous Peoples (IPs) & Local Communities), consultations were held from July 30 to August 8, 2025 in Inongo and from September 17 to 24, 2025 in Nioki, during which appropriate mechanisms for the use of their resources were put in place following FPIC for the activity plan produced

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by them. Representatives of communities benefiting from the nested project WWC-ERA investments were also invited and attended various consultations.

Regular stakeholder consultations are conducted as needed with beneficiaries and relevant stakeholders where the inclusion of the most vulnerable people is ensured through a combination of three priority actions: (i) mandatory representation quotas for women, youth, and Indigenous Peoples on Local Development Committee (CLD) boards were enforced, with women required to participate in household-level decisions on incentive allocation; (ii) accessible complaint channels for non-literate and indigenous populations (suggestion box, in-person mediation, awareness-raising in local languages, and assistance with complaint formulation); and (iii) differentiated grievance follow-up based on vulnerability profile, with supervisory missions specifically targeting gender-based violence (GBV) and sexual and reproductive health and rights in remote areas. The mechanism incorporates a parallel referral system to ensure survivor confidentiality, and the provincial launch is preceded by contracts with Local Implementing Agencies to guarantee effective ownership by field entities.

The BSP was presented to stakeholders at the Provincial Steering Committee of the IFLMP/ERPA held in Inongo on April 21, 2022. It was then validated at a national workshop held in Kinshasa on May 6, 2022. The BSP was deemed acceptable to all stakeholders and was made public after validation and made available on the website of the Ministry of Environment and Sustainable Development and on the FCPF website.

Following the update of the BSP, a stakeholder workshop was held in December 2024 in the provincial capital of Mai Ndombe and brought together about 100 participants (Governor of the Province and members of its provincial government, provincial elected officials, territorial administrators and civil society). The main objective of this workshop was to increase understanding of the ERPA, to obtain Free, Prior and Informed Consent from stakeholders and to raise awareness of the BSP. Specifically, the objectives were to: (1) provide an overview of the ERP and the stakeholder consultation processes on the BSP; (2) present the updated BSP; (3) present the activities that can be financed by the ERP and to gather the opinions and considerations of stakeholders. Overall, stakeholders were supportive of the revisions in the BSP and the programmatic activities.

A High-level stakeholder information and discussion workshop on the Benefit Sharing Plan (BSP) and the status of the ERPA was held at the national level in Kinshasa on January 23, 2025. It brought together 50 participants, including the MEDD represented by its Secretary General and its Directors and Heads of Divisions, FONAREDD, the CN-REDD, the DIAF, the PIF-CU, the Ministry of Finance, the National Forest Fund, the World Bank, and various other stakeholders to explain what the ERPA is, its relevance, how it functions, and the final prerequisite for the first disbursement. This workshop provided an opportunity to share the updated BSP and to outline the actions and responsibilities incumbent on the actors and on which the DRC will need to align itself to ensure payment. The key outcomes of this high-level meeting were: information sharing and common understanding of and commitment to follow the roadmap and work towards the first disbursement.

In terms of issues raised during stakeholder consultations (see Table 2), these include mainly the structural inequalities of the international carbon market and the benefit allocation percentage to IPLCs. The central issue concerned the classification of the DRC as a HFLD (High Forest, Low Deforestation) country and its consequences for the marketing of carbon credits: why conserve forests if the emission reductions generated struggle to find buyers. Participants denounced an injustice in the carbon market

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that penalizes territories that have historically preserved their forest cover, calling into question the financial viability of the emerging "green corridor." Furthermore, a recurring question concerned the perceived inequity of 2% quota allocated to Indigenous Peoples and Local Communities, deemed disproportionate to the multi-generational conservation efforts undertaken by these stakeholders.

These concerns were addressed through an educational and transparent approach. Regarding the HFLD issue, it was explained that the Mai-Ndombe ERPA is an innovative results-based payment mechanism negotiated with the World Bank's FCPF, distinct from the traditional voluntary carbon market. The DRC has adopted a hybrid model of centralized and decentralized integration, allowing for additional reductions in the voluntary market despite its HFLD status. On the 2% issue, it was clarified that this amount represents a historical legal recognition of a payment based on the non-performance of the Local Authorities' commitments and guarantees their continued involvement in the program's implementation.

Additional capacity-building will be provided to all stakeholders under the OPERPA project to ensure that capacity is strengthened as BSP implementation progresses.

Table 2. A summary of the consultations is provided below:

#	Date	Location	Type / Level	Main Topic / Purpose	Participants / Stakeholders
1	April 21, 2022	Inongo, Provincial capital, Mai Ndombe	Provincial Steering Committee (IFLMP/ERPA)	Presentation of the BSP to stakeholders	Provincial Steering Committee members and other provincial stakeholders
2	May 6, 2022	Kinshasa	National workshop	Validation of the BSP; agreement that BSP is acceptable to all stakeholders and can be made public	National-level stakeholders; Ministry of Environment and Sustainable Development; FCPF-related stakeholders
3	march 6, 2022	Kinshasa	National	Civil Society Press Conference on the ERPA and its Benefit Sharing Plan	Local press, civil society representatives
4	December 2024	Inongo, Provincial capital, Mai Ndombe	Provincial stakeholder workshop	Update of BSP; increase understanding of ERPA; obtain FPIC; raise awareness of BSP; present ERP-financeable activities	~100 participants: Governor and provincial government, provincial elected officials, territorial administrators, civil society

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5	December 2024	Inongo, Provincial capital, Mai Ndombe	Provincial stakeholder workshop	Consultation workshop and mapping of GBV providers and service providers	Governorate advisors, Head of the Gender Division, Social Affairs Division and Health Division, actors from various sectors of care (Health, Legal, Psychosocial.
6	July 30 – August 8, 2025	Inongo, Provincial capital, Mai Ndombe	Community consultations	Define mechanisms for use of resources for IPs & Local Communities; FPIC on their activity plans	Indigenous Peoples and Local Communities; representatives of communities benefiting from nested WWC-ERA investments
7	September 17 – 24, 2025	Nioki	Community consultations	Same process as above: mechanisms for resource use and FPIC on activity plans	Indigenous Peoples and Local Communities; representatives of communities benefiting from nested WWC-ERA investments
8	October 18 to 19, 2025	Nioki	Stakeholder consultations	Information and stakeholder consultations on the program document for the "Improving Access to Benefits while Reducing Emissions (EnABLE) Project" and information on the content of the activities that can be financed by the ERPA Mai-Ndombe	Indigenous peoples, local communities, environmental civil society, local and political administrative authorities (territorial administrators and Rural Agricultural Management Councils), provincial ministers of Mai Ndombe
6	January 23, 2025	Kinshasa	High-level national stakeholder workshop	Information and discussion on BSP and ERPA status; explain ERPA; share updated BSP; align on roadmap to first disbursement	MEDD (SG, Directors, Heads of Divisions), FONAREDD, CN-REDD, DIAF, PIF-CU, Ministry of

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					Finance, National Forest Fund, WB
9	February 19, 2026	Inongo, Bolia Sector	Local	Sensitization of communities on the ERPA and the Benefit Sharing Plan	Sector leader, community representative, community leaders.
10	February 12-13, 2026	Inongo	1st Provincial Steering Committee Meeting	Information and discussion on the ERPA scope and the planned programmatic activities; discussion on the project's governance approach and the roles and responsibilities of the stakeholders; approval of the Annual Work Plan and Budget (AWPB Year 1)	Provincial Government, Provincial Parliament, FONAREDD, CN-REDD, DIAF, PIF-CU, Civil society organizations, WWC-ERA, WWF
11	February 24 to March 1, 2026	Kiri, Pendjwa and Lutiyi sectors	Local	Sensitization of communities on the ERPA and the Benefit Sharing Plan	Sector Leader, Community Representative, Community Leaders.
12	April 16, 2026	Kinshasa	National Steering Committee Meeting*********	Information and discussion on the ERPA scope and the planned programmatic activities, analysis and approval of the 2026 annual work plan and budget (AWPB), Status of implementation of the Benefit Sharing Plan	Ministry of Finance, MEDD), FONAREDD, PIF-CU, WB, Ministry of Finance, Civil society organizations,
13	May 12-13	Inongo	Local	Awareness/information conference for student youth on the ERPA and its BSP.	
14	June 20-29	Inongo, Selenge Territoire, Bobangi, Cité Kiri, Pendjwa, Nioki, Cité Mushie, Mbali, et	Local	Information and awareness raising of local communities and indigenous people	Political and Administrative Authorities, representatives of Local Communities and Indigenous Peoples, PIF-CU-Team.

********* https://www.environews-rdc.org/en/articles/2026/04/20/foret-la-banque-mondiale-reaffirme-son-soutien-a-la-reduction-des-emissions-de-mai-ndombe

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		Cité Kwamouth.			

3.3 **Is the FGRM functioning and accessible to people living in the target areas with uptake channels? Is there evidence on the number and types of feedback and grievances, and how they were addressed? Please briefly describe them here and as relevant please also include links**

The PMU, PIF-CU, had an operational Grievance Redress Mechanism (GRM) in place, developed and used under other projects it manages. This existing GRM was used to handle complaints and feedback related to environmental and social issues, and its procedures and tools were well established. In 2021–2022, a total of 2,630 people, including 819 women, benefited from capacity-building activities. The Grievance Redress Mechanism (GRM) was fully operational, and the grievance register was made public. The Environmental and Social Safeguards Specialist (ESSS) monitors and reports on grievances as follows: a) prepares grievance resolution reports indicating the reference numbers and status of complaints. The ESSS also reports on and analyzes the types of complaints, their level, and the measures taken to reduce them, and maps the actors initiating these measures; b) the implementing agency received training on the grievance mechanism and must comply with its requirements. Its representatives attend community awareness or training sessions on the GRM and safeguards delivered by the ESSS. They are responsible for recording all complaints and non-compliance incidents in the site logbook. They ensure that grievance channels are accessible, including in person, by phone, in writing, via suggestion box, or by email.

Complaints are acknowledged within three days. Investigations may include site visits and meetings to determine the scope and impact of the complaint and to explore response options. All complaints are addressed within seven days after the end of the investigation. If more time is needed, the complainant is informed in advance. Grievances are closed as soon as possible after all reasonable efforts have been made to resolve them. The response communicates the findings and resolutions of the investigation and seeks the complainant's approval. If satisfied, the complainant signs the agreement and the grievance is closed.

In total, during the Integrated REDD+ investment phase, the GRM received 77 complaints, of which 76 were resolved (see Annex 1 on safeguards implementation, section 2.4). No complaints related to SEA/SH (sexual exploitation and abuse/sexual harassment) were recorded during the implementation of the grievance mechanism. PIF-CU organized three supervision missions on environmental and social measures, focusing on: mass awareness-raising on GBV aspects and the launch of the GRM in the Tumba Lediima Reserve; follow-up on the implementation of environmental and social measures at construction sites; stakeholder mobilization around project activities; and training on safeguard policies and awareness-raising on SEA/SH aspects. It should be noted that complaints related to the validation of disputed natural resource management plans in the territory of Bolobo were confirmed as satisfactorily closed during the same period.

The GRM specific to the ERP was finalized, validated by the World Bank and published on the official website of the program in June 2025[†††††††††]. This ERP-specific mechanism builds on PIF-CU's prior experience but is tailored to the particular scope, stakeholders, and risks of the ERP, including its benefit-sharing arrangements and activities in the Maï-Ndombe Province. It explicitly incorporates sensitivity to

[†††††††††] (https://ucpif.org/images/medias/VF_MGP_PRE-CAVRE.pdf

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SEA/HS complaints, with a parallel referral circuit ensuring the confidentiality and protection of survivors. The communication tools specific to the FGRM (posters, leaflets) have been finalised. The official launch of the MGP at the provincial and territorial level is scheduled for the second quarter of 2026, after the signing of contracts with the Local Implementing Agencies, allowing immediate and effective appropriation by the operational structures in the field. To date, no complaints have been registered and the MGP dissemination plan is available.

Institutional set up of the GRM:

Level 1
Local development Committee (LDCs), Rural Agricultural Management Councils (CARGs), Designated and Local Implementation Agencies, nodal complaint coordinator

- Sensitization of communities and other stakeholders on the GRM
- Receiving and processing the vast majority of low and medium severity complaints
- Receive and refer GBV/SEA/HS complaints to designated committee and professional service providers
- Report received grievance Project Coordination Unit

Level 2
Project Coordination Unit at the national level

- GM Oversight and assign complaint resolution responsibilities to existing staff
- Design of GRM sensitization tools and communicate for effective GRM
- Intake and handling of serious/hyper-sensitive and unresolved complaints at Level 1
- Handling of appeals in case of satisfaction at the first level
- Compilation of complaints and design of one centralized grievance registration database
- Analyze grievance data, draw lesson and make improvement

Level 3
Project Steering Committee

- Handling of serious complaints (except GBV/SEA/HS complaints) not resolved at level 2
- Follow-up participation in the event of compensation
- Referral to other bodies or mechanism in case of Unresolved complaints at level 2
- Monitoring, evaluation, accountability and Learning from the results and communicate back to all parties involved;

3.4 **In cases where capacity building initiatives are ongoing, confirm whether the Program Entity has completed required capacity building measures to ensure system effectiveness. What other measures are still outstanding?**

As part of the workshops to develop the activity plans of the Indigenous Peoples (IPs), the Local Communities, and the Provincial Government, the PIF-CU had included information sessions on the functioning of the Program's BSP. A total of 2880 people, 633 of whom were women and 540 indigenous people benefited from awareness raising on the BSP.
Further information and training sessions are planned throughout program implementation on (ii) the implementation of the BSP, the GRM, the mechanism for triggering ERPA payments, natural resource management, etc.

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4. **Status of Benefit Distribution for the first ER payment. If there was a delay in the overall disbursement of funds, please explain.**

Table2. provides an overview of the benefit distribution status for the first Emission Reductions (ER) payment.

Beneficiaries	Total benefit allocation	Allocation of the first tranche	Amount Distributed
PIU	2 500 000.00	973 950.50	973,950.50
Provincial Government	2 000 000.00	779 160.40	708,327.64
Sub-total 1	**4 500 000.00**	**1 753 110.90**	**1,682,278.14**
Non-performance-based payments			
Local community	1 010 000.00	354 517.98	0
Indigenous People	1 010 000.00	354 517.98	0
Sub-total 2	**2 020 000.00**	**709 035.96**	**0**
Performance-Based Payments			
Integrated REDD+ Investment share for the benefit of community	48 480 000.00	17 016 863.14	**1,547,457.62**
Sub-total 3	**48 480 000.00**	**17 016 863.14**	**1,547,457.62**
Grand Total	**55 000 000.00**	**19 479 010.00**	**3,229,735.76**

4.1 **Indicate the total number of beneficiaries who received benefits, and please provide this information as per the arrangements described in the BSP. For example, the number of beneficiaries should be disaggregated.**

PIF-CU and the Provincial Government have received their respective shares of the first payment of monetary benefits, in line with the BSP. Also, some procurement expenditures were made for local communities and Indigenous Peoples under the performance-based payment component. For the non-performance-based payment component, procurement contracts for items such as motorcycles, bicycles, sewing machines, mills, rice dehuskers, etc. have also been launched. With the commencement of activities by the Local Implementing Agencies and the effective start of field activities, a gender-disaggregated breakdown of beneficiaries will be shared in the next report.

PIF-CU's share is financing monitoring and evaluation (including safeguards and communication), human resources, logistics, and overall Program operations. As the program management entity, PIF-CU, in addition to awareness raising activities is also already implementing several investment-related activities, including finalizing the two Lediba wharves, which will be finalized by end of August 2026, acquiring tools (bags, docking materials, etc.), and purchasing vehicles and equipment for the Local Implementing Agencies. Additional procurements are underway with the remaining investment funds (e.g., computer equipment, tractors).

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The Province's share has been used to purchase vehicles (pick-ups, motorcycles) to enable the Provincial Authorities to fully play their role in monitoring Program implementation, as set out in the Order establishing the Provincial Steering Committee. In addition, the province is using its own resources to finance the rehabilitation of eight (8) sector buildings as part of efforts to restore state authority. Under PIF-CU's supervision, the Province is continuing to implement the approved procurement plan, with some contracts to be financed from the first ERPA tranche.

The provincial government has channeled a portion of the revenues earned from reduced deforestation directly to the communities, including IPs that serve as the forests' stewards. This benefit-sharing mechanism is now translating into life-changing infrastructure and nowhere is its impact more visible than in access to safe drinking water. To date 9 boreholes equipped with solar powered system have been constructed providing clean water to more than 218,000 direct beneficiaries **(See below Text Box 1 on Water for Life: How Carbon Revenues Are Transforming Communities in the DRC)**.

Under the program's Benefit Sharing Plan, the provincial government is ensuring meaningful portion of these revenues flow directly to local communities and administrative entities across the province, not as abstract financial transfers, but as concrete investments in governance and public service delivery as well as connectivity. Across the four territories, Inongo, Kutu, Oshwe, and Mushie, a series of administrative buildings are being constructed to bring government closer to the people. Taken together, the ERPA-funded infrastructure across Mai-Ndombe Province is reaching more than 856,000 direct beneficiaries (**See below Text Box 2 on Forests, Revenues, and Renewed Governance: How ERPA Benefit Sharing is Transforming Public Services in Mai-Ndombe**).

The Program provides both monetary and non-monetary benefits. It will consider gender and social dimensions (cultural and social roles of women and men) in identifying and characterizing beneficiaries. Per the BSP, beneficiaries include public institutions, Indigenous Peoples, local communities, and civil society organizations, located at village, provincial, and other levels.

At this stage, the only beneficiaries that have received payments are public entities (PIF-CU and the Provincial Government). The shares reserved for IPLCs will be disbursed once the ALEs are recruited. An assessment of the capacities of structures involved in previous initiatives (IFLMP and its additional financing) is underway, with a view to engaging them through direct contracting. The objective is to sign these contracts by April 30, 2026, to facilitate disbursement.

Once the ALEs and other service providers are deployed in the field, a detailed mapping of beneficiaries and stakeholders will be prepared and shared.

4.2 **Following the BSP and operational manuals (if applicable), please provide information on the benefit distribution mechanisms. For example, a BSP may include the submission of project or selected investment, community action plans, institutional work plans, etc. for beneficiaries to receive benefits. For each type of benefit to be distributed, summarize the status of approval and allocation.**

For the UC-FIP, resources are used based on the Annual Work and Budget Plan. In the case of the Provincial Government, the use of its resources is based on the Activity Plan proposed by the Province and which has been validated by the PIF-CU. This Plan is accompanied by a procurement plan, the execution of which is carried out under the supervision of the PMU.

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For the IPLCs, Activity Plans were developed in a participatory manner with the representatives at the national and provincial levels in accordance with the BSP. The resources allocated to the Program Management Unit are held in the Program's dedicated account. They are used to finance the following activities:

- Awareness-raising activities on ERPA in the territories of Maï-Ndombe Province.
- Remuneration of staff responsible for supervising and monitoring the implementation of ERPA, based in Kinshasa, Inongo, and Nioki.
- Operating costs of the offices in Kinshasa, Inongo, and Nioki.
- Meetings of the National Steering Committee and other Program governance bodies (COPIL).
- Activities related to the preparation of the 2nd and 3rd monitoring reports of the PRE.
- Share of the Provincial Government

The resources allocated to the Provincial Government were transferred to a dedicated account opened by the Province, used exclusively for activities defined in the Provincial work plan, which was approved by the Program Management Unit and the National Steering Committee. To date, the following activities have been carried out with these resources:

- Purchase of 2 jeeps for the Provincial Government.
- Purchase of 22 motorcycles for the territories and sectors.
- Purchase of a motorboat.
- Launch of rehabilitation works for the Maï-Ndombe Provincial Government building.
- Awareness-raising activities for provincial authorities and technical services on the Program.
- Launch of rehabilitation works for 8 sector offices, of which the offices of BADIA (Territory of Kutu) and NKAW (Oshwe) have been completed and handed over.
- Construction of improved water boreholes in the 8 territories of Maï-Ndombe, of which 2 (in the rural town of Kutu and the rural town of Oshwe) have already been completed and delivered.
- Share for Indigenous Peoples and Local Communities under Non-Performance-Based Payments

The resources intended for IPLCs (non-performance-based payments), which recognize past efforts that contributed to the conservation of large forest areas in DRC, are held in the Program's dedicated account. In line with the Benefit Sharing Plan, PIF-CU has supported the organization of participatory workshops to develop action plans for Indigenous Peoples and Local Communities (IPLCs). PIF-CU is currently finalizing the identification of local organizations (NGOs) that will be responsible for implementing these Action Plans. The contracts are expected to be signed before the end of April 2026.

To ensure the application of FPIC, the Activity Plans for non-performance based payments underwent a rigorous process: dedicated participatory consultation missions — in Inongo (August 2025) for the three territories of Inongo, Kiri and Oshwe, then in Nioki (September 2025) for the five remaining territories (Kutu, Bolobo, Kwamouth, Mushie and Yumbi), dissemination of Program documents (ERPA, BSP) in local languages, work in territorial focus groups, obtaining the documented FPIC by signed minutes conducted by the PIF-CU with the support of REPALEF and GTCR-R. These meetings facilitated the inclusive identification of priority needs, collective prioritization through territorial focus groups, and validation by consensus formalized through Acceptance Reports and the obtaining of FPIC.

In terms of support provided, the plans prioritize capacity building, the construction of community infrastructure (multipurpose hall, means of transportation), training on natural resource management,

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participatory mapping, and women's economic empowerment through Village Savings and Loan Associations (VSLAs), etc.

In essence, the plans are distinguished by their objective of historical recognition and the sustainability of community engagement, their bottom-up and participatory approach to defining needs, and their inclusive governance with separation of groups (Collective/Participatory Action) and gender representation.

The choice to acquire different means of transport (motorcycles, bicycles, motorboats, etc.) is due to the serious mobility constraints in Maï-Ndombe Province. The main roads are in very poor condition, and there is a lack of boats and other safe navigation equipment in a province where about 80% of the territory is covered by rivers and water bodies.

Share for Investments for IPLCs under Performance-Based Payments

The resources earmarked for investments to be implemented as Integrated REDD+ Projects for Indigenous Peoples and Local Communities under performance-based payments are managed by PIF-CU. Following consultations with stakeholders at both national and provincial levels, PIF-CU prepared an activity program that has been approved. Its implementation will be entrusted to Local Implementing Agencies (ALEs), which are anchored in the different territories of Maï-Ndombe, under a Delegated Contracting Authority (Maîtrise d'Ouvrage Déléguée, MOD) arrangement. The recruitment process is ongoing, and contracts with the selected structures are expected to be signed in April 2026.

While awaiting the deployment of the ALEs to start field activities, PIF-CU has already initiated several processes, including: i) finalization of construction works for the Lediba wharves; ii) acquisition of agricultural tools (hoes, machetes, shovels, spades, etc.); iii) acquisition of polyethylene bags for seedling production to be distributed to communities; and iv) acquisition of vehicles and equipment (motorcycles, motorboats) to ensure the mobility of ALE teams. The resources already disbursed have also financed the completion of these works.

Table2. Summary of benefit allocation and distribution:

Beneficiaries	**Total benefit allocation (USD)**	**Allocation of the first tranche (USD)**	**Allocation of the second tranche (USD)**	**Amount Paid (USD)**
Operational Costs				
PMU share	2 500 000.00	973 950.50	637 000.00	1 610 950.50
Share of Provincial Government	2 000 000.00	779 160.40	509 600.00	1 217 927.64
Sub-total 1	**4 500 000.,00**	**1 753 110.90**	**1 146 600.00**	2 828 878.14
Non-performance-based payments				
Local community share	1 010 000.00	354 517.98	257 068.00	0
Indigenous People Share	1 010 000.00	354 517.98		0

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			257 068.00	
Sub-total 2	**2 020 000.00**	**709 035.96**	**514 136.00**	-
Performance-Based Payments				
Integrated REDD+ Investment share for the benefit of community	48 480 000.00	17 016 863.14	12 339 264.00	1,547,457.62
Sub-total 3	**48 480 000.00**	**17 016 863.14**	**12 339 264.00**	**1,547,457.62**
Grand Total	**55 000 000.00**	**19 479 010.00**	**14 000 000.00**	**4,376,335.76**

4.3 **Are the benefit eligibility criteria described in the last BSP still relevant? If there have been any revisions to the criteria in the reporting period, please describe them.**

The eligibility criteria for benefits described in the BSP remains relevant. No revisions were made.

4.4 **Provide information on the processes and timing for the delivery of benefits (for example, whether benefits are delivered on an ad-hoc or continuous/periodic basis).**

Per the BSP, benefits are delivered through two main modalities: non-performance-based payments and performance-based payments, each with its own timing and process.

Non-performance-based payments (Provincial Government, IPLCs, and PIF-CU management fees) are disbursed automatically as soon as funds become available in the Program Management Unit (PMU) account. The same automatic mechanism applies to the private sector operator.

Performance-based payments, which will benefit communities, are delivered periodically rather than on an ad-hoc basis. Disbursements will be made according to performance milestones and indicators specified in the respective contracts. Once the agreed milestones are verified, the corresponding payments will be released.

4.5 **Provide information on any specific agreements signed with the beneficiaries for them to receive the benefits, and the main terms and conditions of these agreements.**

The Program has put in place specific agreements with beneficiaries that define the conditions under which they receive benefits.

For the Provincial Government, a collaboration protocol sets out the following main obligations as conditions for accessing and using ERPA resources:

- Open a dedicated bank account for ERPA funds.
- Designate technical experts responsible for implementing ERPA activities.
- Carry out Quality Assurance and Quality Control (QA/QC) of works financed under the Program.
- Prepare and submit mission reports and activity reports.
- Comply with the Environmental and Social Management Instruments, including provisions on Gender-Based Violence (GBV).
- Provide the Client with information on needs for services, materials, and equipment, including terms of reference and technical specifications.
- Ensure compliance with the Environmental and Social Commitment Plan (ESCP), including adherence to the code of conduct and occupational health and safety requirements.

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- Establish mechanisms for immediate notification to the Client of any incident or accident related to or affecting Program activities and report such events within 24 hours of becoming aware of them.
- During field missions, comply with the guidance set out in the Project's road safety good practice manual.

In addition, specific agreements have been signed with *Réseau des Populations Autochtones et Locales pour la Gestion Durable des Écosystèmes Forestiers de la RDC (*REPALEF) (Network of Indigenous and Local Populations for the Sustainable Management of Forest Ecosystems in DRC), which is the national platform that brings together organizations representing Indigenous Peoples and local communities and the *Groupe de Travail Climat REDD+ Rénové* (GTCR-R) - Renovated Climate and REDD+ Working Group- which is the main civil society coordination platform on climate and REDD+ in DRC, to formalize their roles in monitoring ERPA implementation and participating in Program governance bodies. Further protocols are being finalized to support the technical services of the Ministry, in particular DIAF and CN-REDD, which will also set out their responsibilities and conditions for receiving benefits.

The resources earmarked for investments to be implemented as Integrated REDD+ Projects for Indigenous Peoples and Local Communities under performance-based payments are managed by PIF-CU. Following consultations with stakeholders at both national and provincial levels, PIF-CU prepared an activity program that has been approved. Its implementation will be entrusted to Local Implementing Agencies (ALEs), which are anchored in the different eight territories of Maï-Ndombe, under a Delegated Contracting Authority (Maîtrise d'Ouvrage Déléguée, MOD) arrangement. The recruitment process is ongoing, and contracts with the selected structures are expected to be signed by April 30, 2026.

4.6 **Describe the mechanisms in place to monitor how benefits are used and whether these payments incentivize participation in ER Program activities.**

There are several entities involved in ensuring the implementation and monitoring of how benefits are used:

Disbursements to beneficiaries by the PMU (PIF-CU) follow the annual work plan and budget approved by the Steering Committee (COPIL) chaired by FONAREDD. The annual work plan and budget were prepared through several working sessions with key stakeholders (PIF-CU, provincial representatives, civil society, and the technical department of the Ministry of Environment) and presented at a provincial workshop. Payments to the Provincial Government are governed by a memorandum of understanding with the PIF-CU that defines the activities eligible for financing, as well as by an annual work plan.

Payments for IPLCs (4%, of which 2% for Indigenous Peoples and 2% for Local Communities) are governed by contracts signed with national NGOs. These contracts are based on terms of reference that define the activities, implementation methods, and required technical expertise.

Payments for rural areas follow the same implementation arrangements as under PIREDD. PIF-CU signs delegated implementation contracts with Local Implementing Agencies (ALEs), which carry out activities and investments in rural areas. PIF-CU is also responsible for monitoring the implementation of ALE activities and the use of funds. PIF-CU disburses payments to community subprojects, as set out in the Monitoring Report.

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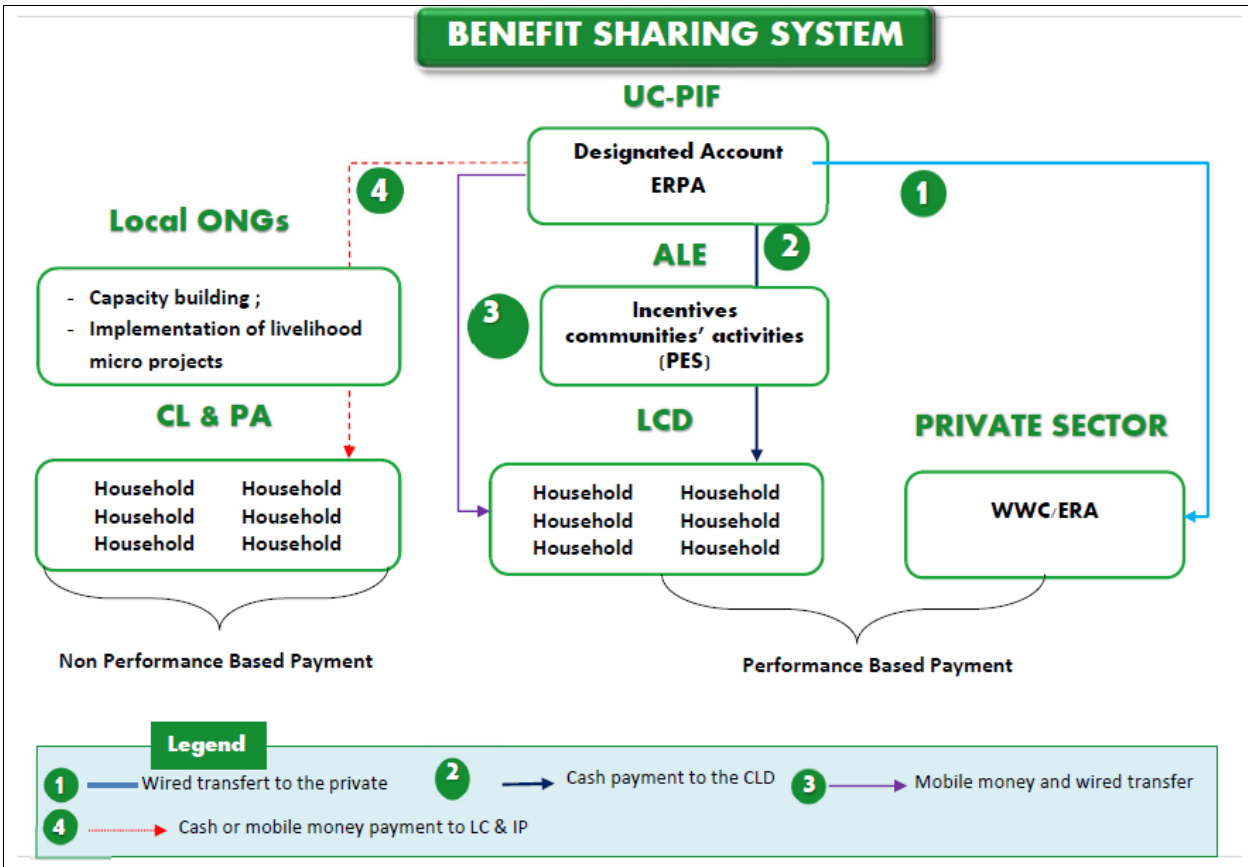

4.7. Describe the financial management arrangements and controls that are in place to record the distribution of benefits, monitor payments, and maintain accounting and internal controls.

The beneficiaries of ERPA resources (Provincial Government, Private Sector, IPLCs) linked to the PIF-CU are managed through Collaboration Protocols such as MoU or Contracts. Resources are made available through the banking system through a designated account (dedicated solely to ERPA operations). Thus, all resources freed up by the Project for the benefit of beneficiaries are monitored through specific accounts. And all the operations involved in requesting and making funds available are tracked and monitored through the bid sheets that show the total amount, the amount disbursed and the balance still to be paid.

Payments are made at the official request of the beneficiaries after validation by the PIF-CU and in accordance with the procedures described in the contracts, conventions or collaboration protocols.

Entities receiving funds are required to substantiate on a monthly basis through a financial report the amount made available to them together with supporting documents evidencing the achievement of activities that are consistent with the objectives of the ERPA in accordance with the World Bank's procedures and guidelines.

The accounts are kept by the PIF-CU's financial team using the TOMPRO software adapted to project management, which automatically generates the summary statements required by SYCEBNL, an accounting system.

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The activities of the ERPA are recorded in accordance with the accounting standards enacted by the Uniform Act relating to the Accounting System for Non-Profit Entities applicable in the DRC, which became mandatory as of January 1, 2024.

It should be noted that the fiduciary team of the PIF-CU Unit organized a capacity building mission to the Provincial team responsible for the management of resources received under the ERPA on (i) financial management and procurement.

4.8 Provide information on how beneficiaries use and report on benefits received. Are there systems in place to track the use of funds? Please describe the difficulties encountered.

The use of funds by the beneficiaries is based on a plan previously approved by both parties. Thus, for all categories of beneficiaries except the private sector, a Program of Activities has been produced and will serve as a benchmark in the allocation and use of resources. Each beneficiary structure is required to open a bank account dedicated exclusively to the activities included in the Program of Activities. At the end of each quarter, the beneficiary is required to produce a technical and financial report. For the financial part, the bank account statement at the end of the quarter is attached.

For the benefits distributed so far to the Province, and for purchases required, a procurement plan was proposed by the Province and validated by the UC-FIP. For other activities, particularly capacity-building workshops and field missions, the Province will have to submit terms of reference to the PIF-CU for its no objection. At the end of each quarter, the Provincial Government will submit a progress report.

The PMU has not encountered any difficulties yet since this is the first time payment is being distributed and is yet to reach ALEs.

Table 3. Total monetary benefit distribution breakdown. ***[The information below is extracted from the detailed Excel table 3 on tab 2 prepared and submitted with this report]***

Total Monetary Benefits Distributed per Beneficiary							
Component	**Sub-Type**	**Amount Allocated**		**Amount distributed**		**Balance**	
		(US$)	**%**	**(US$)**	**%**	**(US$)**	**%**
Government	National (PIU)	1,610,950.50	5	1,610,950.50	100	0	0
	Regional (Provincial)	1 288 760.4	4	1 217 927.64	94.5	70 833.40	5.5
	Territory/Municipal	0	0	0	0	0	0
Private Sector		0	0	0	0	0	0
CSO (REPALEF, GTCR-R)		0	0	0	0	0	0
IPs		611,585.98		0,00		611,585.98	
Local communities		611,585.98		0,00		611,585.98	

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Community-based investments		29 356 127.141	91	1 547 457.0	5	27,808,669.52	95
GRAND TOTAL		**33 479 010.0**	**100**	**4,376,335.76**	**13**	**29,102,674.24**	**87**

Note: Categories and subcategories should follow BSP and program needs.

Table 4. Total Non-Monetary Benefit Distribution. ***[the information below is extracted from the detailed Excel table 4 on tab 2 prepared and submitted with this report]***

Total Non-Monetary Benefits Distributed per Beneficiary							
Component	**Sub-Type**	**Amount Allocated**		**Amount distributed**		**Balance**	
		(US$)	**%**	**(US$)**	**%**	**(US$)**	**%**
Local Government Area	National	0		0		0	
	Regional	240,000.00		240,000.00		0	
	Territory	0		0		0	
Private Sector		0		0		0	
CSO		0		0		0	
GPI		0		0		0	
Local communities		0		0		0	
Community-based investments		1,894,187.09		1,618,217.79		275,969.30	
GRAND TOTAL		**2,134,187.09**		**1,858,217.79**		**275,969.30**	

Note: Categories and subcategories should follow BSP and program needs.

Table 5. Distribution of benefits to local communities divided by monetary and nonmonetary and gender. ***[the information below is extracted from the detailed Excel 5 table on tab 2 prepared and submitted with this report]***

	Total Monetary				**Total Non-Monetary**			
	No. of people	**Disbursed in USD**	**% of total**	**GRAND TOTAL**	**No. of people**	**Disbursed in USD**	**% of total**	**GRAND TOTAL**
Men	0	0	0	0	135,675	156,066.90	0	156,066.90
Female	0	0	0	0	380,263	311,552.81	0	311,552.81
GRAND TOTAL	**0**	**0**	**0**	**0**	**515,938**	**467,619.71**	**0**	**467,619.71**

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5 Key Issues and Actions

5.1 Based on the experience of implementing BSP in the reporting period, identify and explain any other key challenges encountered that have not yet been described above, as well as how and when they will be addressed.

N.A

5.2 Are there any other emerging risks that could affect the implementation, sustainability, or effectiveness of the BSP? Please explain.

N.A

5.3 Does Benefit Sharing Allocation contribute to the core objectives and legitimacy of the ER Program and effectively reward/incentivize the adoption or sustainability of emission reduction measures? Please describe if applicable.

Yes, resources help encourage responsible natural resource management. For the Provincial Government, the resources made available substantially strengthen their technical operational capacities and their responsibility for monitoring the activities financed under the Emission Reduction Program.

5.4 Describe lessons learned and, if applicable, recommendations for improvement or modification of BSP.

Since this is the first payment, lessons learned will be developed as payment distribution advances.

6 applicable, please provide information on any other indicators in the BSP and operational manuals (if applicable), including an explanation for indicators not met.

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Text Box 1

Water for Life: How Carbon Revenues Are Transforming Communities in the DRC



Photo 1: *A woman fetches water at a newly constructed public standpipe in Kutu Territory, Mai-Ndombe Province, built through community benefit sharing revenues under the ERPA, with support from the World Bank's Forest Carbon Partnership Facility (FCPF)*

In the vast rainforests of the Mai-Ndombe province the Democratic Republic of Congo (DRC), where towering trees absorb millions of tonnes of carbon each year, a quiet revolution is taking place, one measured not only in reduced emissions, but in clean water flowing from newly installed taps in remote communities.

Under the DRC's Emission Reductions Payment Agreement (ERPA) with the Forest Carbon Partnership Facility (FCPF), the DRC received on June 6, 2025, its first-ever carbon credit payment under the ERPA amounting to US$19.48 million for the verified reduction of 3.89 million tonnes of carbon emissions during the first reporting period (2019–2020). This was the first results-based payment for a jurisdictional REDD+ program in the Congo Basin.

The country has committed to channeling a portion of the revenues earned from reduced deforestation directly to the communities that serve as the forests' stewards. This benefit-sharing mechanism is now translating into life-changing infrastructure and nowhere is its impact more visible than in access to safe drinking water.

In the territory of Kutu, in the Mai-Ndombe province, the Commune Rurale de Kutu long relied on unprotected water sources that exposed residents to waterborne diseases. Today, a solar-powered hybrid borehole drilled to a depth of 52 meters delivers clean water at a rate of 30 liters per minute, with two public taps now serving 1,000 people directly, in a commune of 8,000 inhabitants. For many, the walk to fetch water has shortened considerably, and the risk of illness has diminished. Nearby, in the densely populated Mongankolo neighborhood of Nioki, the impact is even broader. A second hybrid borehole, 51 meters deep, produces up to 37.5 liters per minute and is fitted with three faucets to serve the flow of residents throughout the day. Completed in just nine days, from March 15 to March 23, 2026, this project now provides clean water to 5,000 people. Among them are approximately 700 Indigenous Peoples from the local Pygmy community, a group that has historically faced significant barriers to basic services. Their inclusion in the project reflects a deliberate commitment, embedded in the ERPA benefit-sharing framework, to ensure that the most marginalized communities are not left behind.

Text Box 1 (continued)



Photo 2: *Women proudly fetching water at a newly constructed public standpipe in Kutu Territory, Mai-Ndombe Province, built through community benefit sharing revenues under the ERPA, with support from the World Bank's Forest Carbon Partnership Facility (FCPF)*

The scale of impact grows even larger in Oshwe, one of the largest territories in the DRC, spanning some 43,000 square kilometers of forest, rivers, and scattered settlements. A potable water borehole installed in the Rural Commune of Oshwe is designed to serve an estimated 212,741 people, approximately 7,490 households, who previously lacked reliable access to safe water. In a territory of this size, where infrastructure has long been scarce, this single investment represents a generational shift in the quality of life for tens of thousands of families.

Across all three sites, the technology of choice, solar and hybrid-powered pumps, reflects a forward-looking approach suited to remote areas with limited electricity access. These systems offer sustainability and low maintenance costs, ensuring that the benefits endure well beyond the initial investment.



Photo 3: *Borehole equipped with solar powered system, in Kutu Territory, Mai-Ndombe Province, built through community benefit sharing revenues under the ERPA, with support from the World Bank's Forest Carbon Partnership Facility (FCPF)*

Text Box 1 (continued)

Taken together, these water projects have already reached more than 218,000 direct beneficiaries, forming part of a broader benefit-sharing portfolio that serves over 856,000 people across the region. They stand as a powerful testament to what becomes possible when forest conservation is paired with fair and transparent revenue sharing, clean water, restored dignity, and communities invested in protecting the forests that sustain them all.



Photo 4: *Inauguration of a public standpipe in Kutu Territory by the Governor of Mai-Ndombe Province, Hon. Lebon Nkodo Kevani, as part of the ERPA Benefit Sharing Program supported by the World Bank's Forest Carbon Partnership Facility (FCPF).*

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Forests, Revenues, and Renewed Governance: How ERPA Benefit Sharing is Transforming Public Services in Mai-Ndombe

Deep in the heart of the Congo Basin, where the forests of Mai-Ndombe Province sequester millions of tonnes of carbon each year, the revenues from forest conservation are being converted into something tangible and immediate: the buildings, offices, and connectivity infrastructure that communities need to access the services of the state.

Through the Democratic Republic of Congo's Emission Reductions Payment Agreement (ERPA) with the World Bank's Forest Carbon Partnership Facility (FCPF), a historic first payment of US$19.47 million was received in June 2025. Under the program's Benefit Sharing Plan, a meaningful portion of these revenues is flowing directly to local communities and administrative entities across the province, not as abstract financial transfers, but as concrete investments in governance and public service delivery.



Photo 1. *Inongo Provincial Government Administration Building, as part of the ERPA Benefit Sharing Program supported by the World Bank's Forest Carbon Partnership Facility (FCPF)*

Across four territories, Inongo, Kutu, Oshwe, and Mushie, a series of administrative buildings are being constructed to bring government closer to the people. In the city of Inongo, a new Provincial Government building spanning 18.90 by 11.80 meters is rising with 33 rooms, including 16 offices and 6 sanitary facilities. Once completed, it hosts public servants serving approximately 150,000 inhabitants. For years public servants have lacked adequate space for provincial administration. In a region where governance has long been hindered by the absence of proper infrastructure, "*this building is more than a construction project it is a statement that the state is present*" say the *Governor of Mai-Ndombe Province, Hon. Lebon Nkodo Kevani*.

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Text Box 2 (Continued)

In Kutu Territory, two additional structures are taking shape: a Sector Administrative building in Lualipeke, providing local officials with a dedicated meeting hall and office space, and a Chiefdom administrative building for the Badia chiefdom in Kempili, accommodating over 86,000 beneficiaries. These facilities give local leaders, chiefs, decentralized technical sector heads, and community representatives, a dignified space in which to conduct public affairs, hear grievances, and coordinate development activities. Before their construction, such functions were often carried out in informal or borrowed settings, undermining the authority and effectiveness of local governance.

Further south, in Oshwe, one of the largest territories in the DRC, covering more than 43,000 square kilometers, a new Sector Administrative building in Nkaw will serve a population exceeding 222,000 inhabitants, of whom the majority are women. The scale of this territory has always made governance challenging; the new facility is a step toward making administration more accessible and responsive to a dispersed population. Similarly, in Mushie Territory, a Chiefdom administrative building for the Baboma-Nord chiefdom in the locality of Mbali is being delivered to serve over 154,000 residents across approximately 25,764 households.

The construction of these facilities has not been without challenges. Several sites experienced delays due to difficult terrain and logistical constraints in remote areas, a familiar reality for infrastructure development in the Congo Basin. The Inongo provincial building, for instance, required more time than originally planned due to field conditions, and the Mushie project was extended by three months. Yet these challenges, and the determination to overcome them, speak to the commitment of the program to deliver results where they matter most.



Photo 2a. *Former Lualipeke administrative building in BABAI Tolo (BEFORE), as part of the ERPA Benefit Sharing Program supported by the World Bank's Forest Carbon Partnership Facility (FCPF)*

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Text Box 2 (Continued)



Photo 2b. *Lualipeke administrative building in BABAI Tolo (AFTER), as part of the ERPA Benefit Sharing Program supported by the World Bank's Forest Carbon Partnership Facility (FCPF)*

What makes this program particularly significant is its intentional focus on inclusion. Alongside the administrative buildings, water infrastructure projects are being implemented to serve communities that have long been overlooked, including 700 members of Indigenous Pygmy communities in the Mongankolo neighborhood of Nioki, who are among the direct beneficiaries of a new borehole and standpipe facility.

Taken together, the ERPA-funded infrastructure across Mai-Ndombe Province is reaching more than 856,000 direct beneficiaries. These projects represent something rare in climate finance: a clear, verifiable connection between forest conservation and improved lives. When communities see offices built, standpipes flowing, and chieftaincy halls inaugurated as a direct result of protecting their forests, the case for conservation becomes self-evident and enduring.

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ANNEX 3: INFORMATION ON GENERATION AND/OR ENHANCEMENT OF PRIORITY NON-CARBON BENEFITS

1. Priority non-carbon benefits

Priority non-carbon benefits were identified during the feasibility studies to prepare the sub-investment program, namely the PIREDD of the Plateau (PIF) and the PIREDD of Mai-Ndombe (CAFI). Based on consultations with stakeholders, four broad categories of non-carbon benefits were clearly predefined at the ER PIN stage: 1. Biodiversity, 2. Rights, 3. Livelihoods & 4. Finance and Governance.

Table 1: Achieving Targets to Generate Non-Carbon Benefits

Priority non-carbon benefits identified within the program area	Indicators / Achieved targets
Biodiversity: Biodiversity is maintained and ecosystem services are improved	For the period under review, the following indicators are available: • Area of community forests under conservation (ha): 2,194 ha of PIREDD Mai-Ndombe • Natural regeneration area: 9,936 of PIREDD Maï-Ndombe • Savannah reforestation area (ha) 2,927.79 ha (of which 2,921.79 ha under PIREDD Maï-Ndombe and 6 ha from AF-FEM) • Area of conservation concession (ha) 1,131,726 ha
Rights: The legal and customary and users' rights of local communities and Indigenous Pygmy Peoples over lands, territories and resources are recognized, respected and strengthened	• Number of territories mapped by participatory mapping clarifying allocations: During the period 2021-2022, no terroir was the subject of participatory mapping. Local governance activities were still being carried out in 695 Local Development Committees (215 PIREDD/Plateau, 480 PIREDD Mai-Ndombe) that were initially established; • Number of validated land use plans for sustainable natural resources management: During the period under review, no land use plans for natural resources management were produced and validated in a participatory manner. The 590 plans (PIREDD/Plateau 110, PIREDD Mai-Ndombe 480) produced under the PIREDD/Plateau and the PIREDD/Mai-Ndombe were still valid and implemented during the period 2021-2022. These plans are valid and updated every 10 years.
Livelihoods: REDD+ benefits are equitably shared; Improve long-term local livelihoods and stakeholder well-being, with a focus on the most vulnerable groups	• Average income per household (US$/year) To understand the impact of the project on the evolution of the monetary situation of the beneficiaries/persons affected by the activities of the IFLMP, a study was conducted in 2022 by an independent firm which showed that agriculture remains the main activity with a significant share of the income of the households surveyed. Indeed, it is through the proceeds of the marketing of agricultural products that households cover their basic needs. Cash income from agriculture increased by 63 percent between 2020 and 2022, from CDF 224,600 (or US$112) per agricultural household to CDF 366,560 (or US$183). • Socioeconomic Investments

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	○ PIREDD Maï Ndombe: Arrears of US$877 from 2021 were paid to communities in 2022, bringing the total amount of environmental service payments to US$1,698,863.39. Approximately 33% of this amount was received by women beneficiaries. In addition, 20 bridges and 8 culverts were constructed, 4 office buildings were built, and 1 mini oil mill was established.
Financing and Governance: Immediate, sufficient and predictable resources are mobilized to reward performance in priority forest areas in an equitable, transparent, participatory and coordinated manner	• Number of rural farm management committees established or restructured and operational. During the period under review, no CARGs were created. Those created during the previous period were still operational. ○ For PIREDD Maï Ndombe: 19 rural agricultural management committees including 4 territories and 15 revitalized sectors ○ For PIREDD Plateau: 10 rural farm management committees per territory • Number of meetings of the REDD+ Provincial Steering Committee: 2 • Number of complaints received, successfully addressed and resolved: 55 complaints, 51 resolved – for details see FRGM section above (*see Annex 1, section 2.4*).

2. Other non-carbon benefits and additional information related to the M&E framework

Livelihood enhancement and sustainability

2.1. Is your CF program testing ways to sustain and enhance livelihoods (e.g. one of your program objective/s is explicitly targeted at livelihoods; your approach to Non-Carbon Benefits explicitly incorporates livelihoods)? Please provide detailed information to justify.

To understand the impact of the project on the evolution of the monetary situation of beneficiaries/persons affected by the activities of the IFLMP, a study was conducted in 2022 by an independent firm which showed that agriculture remains the main activity with a significant share of the income of the households surveyed. Indeed, it is through the proceeds of the marketing of agricultural products that households cover their basic needs. Cash income from agriculture increased by 63 percent between 2020 and 2022, from CDF 224,600 (or US$112) per agricultural household to CDF 366,560 (or US$183). New approaches have been successfully tested to improve community livelihoods. In particular, the project introduced an approach that combined territorial development planning at the community level with implementation incentives through the ESP. PIREDDs have established PES contracts in the territories, rewarding communities and households for deploying sustainable agroforestry activities. In addition, PIREDDs have promoted the production of non-timber forest products and supported micro-projects for indigenous peoples. The resources of the ESP have enabled the various communities to finance, as they chose, activities at the household level (payment of school fees, acquisition of certain assets, development of income-generating activities, etc.) but also infrastructures for community use (schools, wells, etc.).

Biodiversity

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2.2. Is your CF program testing ways to conserve biodiversity (e.g. one of your program objective/s is explicitly targeted at biodiversity conservation; your approach to Non-Carbon Benefits explicitly incorporates biodiversity conservation)? Please provide detailed information to justify.

The Mai-Ndombe province comprises a rural landscape that includes forests, productive lands, protected areas, and logging concessions. The Integrated Forest Landscape Management Project piloted new approaches by improving sustainable land management practices in production landscapes, expanding sustainable management plans to improve biodiversity conservation, and establishing community-managed forest concessions, which are, among others, managed by Indigenous Peoples.

ER-PR activities are often located between protected areas and human settlements, offering unique opportunities for adopting nature-based sustainable practices that support both nature conservation and the local economy. Although the IFLMP did not conduct systematic biodiversity assessments (such as species richness, relative abundance, genetic variability, and threatened species share) for the period 2019-2020, various testimonies from project beneficiaries indicate that the variety of plant and animal species present in areas undergoing restoration has significantly increased compared to the period prior to the project. Fauna began to reappear, and non-timber forest products (such as mushrooms and caterpillars) became available on the land where Sustainable Land Management (SLM) activities were being implemented.

- Area of community forests under conservation (ha): 2,194 ha of PIREDD Mai-Ndombe
- Natural regeneration area: 9,936 of the PIREDD Mai-Ndombe;
- Savannah reforestation area (ha): 2,927.79 ha (of which 2,921.79 ha under PIREDD Maï-Ndombe and 6 ha under FA-FEM);
- Area of conservation concession (ha) 1,131,726 ha

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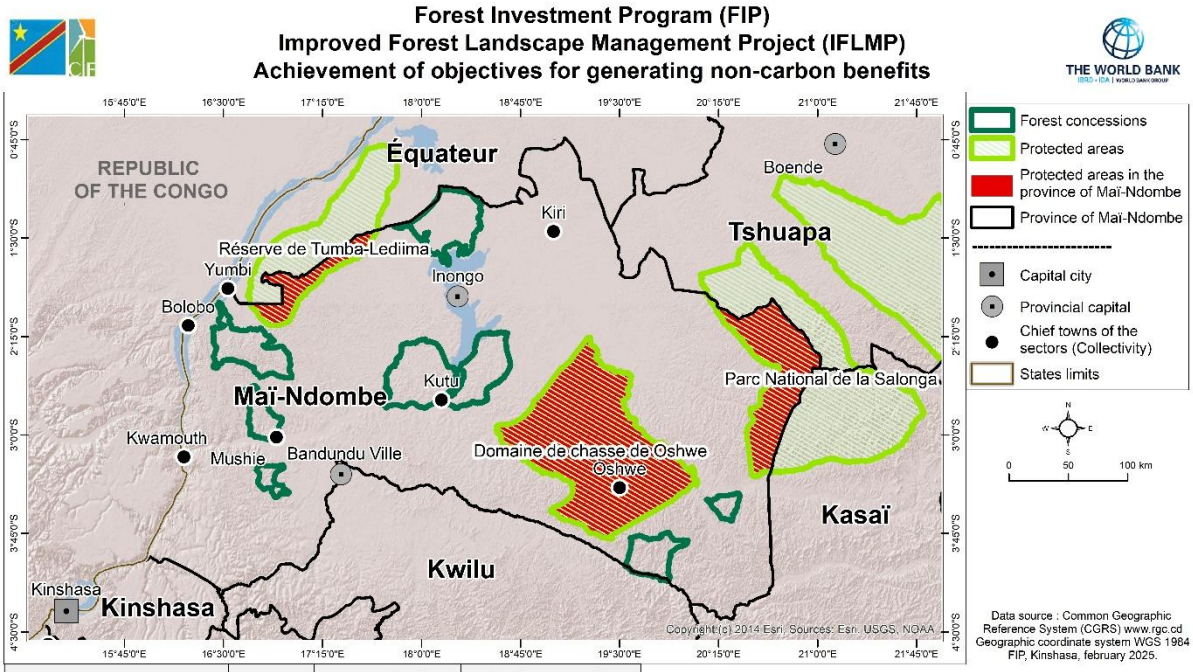
Figure 1. Protected Areas and Logging Concessions



Surface area of protected area in Maï-Ndombe province	Area (ha)	Area of Maï-Ndombe Province (ha)	Ratio of protected area to province of Maï-Ndombe (%)
Salonga National Park	507,542	12,724,300	4.0
Oshwe hunting area	1,324,944	12,724,300	10.4
Tumba Lediima Natural Reserve	191,042	12,724,300	1.5
Total	**2,023,528**	**12,724,300**	**15.9**

Details	Area (ha)	Maï-Ndombe Province (ha)	Ratio (%)
Protected areas	2,023,528	12,724,300	15.9
Forest concessions	1,131,726	12,724,300	8.9
Total	**3,155,254**	**12,724,300**	**24.8**

Protected/Conserved Areas

2.3. What amount (in ha) of protected or conserved areas are included in your CF program area?
Has this amount increased or decreased in the last year? If so, by how much?

Officially designated protected or conserved areas cover about 16% of Mai-Ndombe Province within the CF program area. These include:
a. Tumba-Lediima Nature Reserve (TLNR), part of which lies in the province and partially overlaps with logging concessions; b. Salonga National Park, which is partly within the province; c. Oshwe Game Reserve, which overlaps with logging concessions and currently has no presence of the Congolese Institute for Nature Conservation (ICCN); d. The hippopotamus reserve on the Sankuru, Kasai, and Kwa rivers, where ICCN has some presence; e. The Mangai hippopotamus reserve, where ICCN is not present; and f. The hippopotamus reserve on the Kasai and Kwa rivers, where there is no permanent ICCN presence.
Salonga National Park has received GEF support through a WWF-implemented project. Oshwe Game Reserve is not considered suitable for short-term support because of the absence of ICCN. The three hippopotamus reserves are not actively managed protected areas. ICCN has identified the Tumba-Lediima Nature Reserve (TLNR) as the highest priority site in the province for investment in protected areas.
Under PIREDD Mai-Ndombe, significant support has been provided to TLNR, a globally important biodiversity area that had previously received almost no national or international funding. A background study on TLNR, published in 2016 by ICCN and WWF, documents its globally significant biodiversity. Created in 2006, the reserve covers approximately 767,800 ha. Its forests remain largely intact, with only

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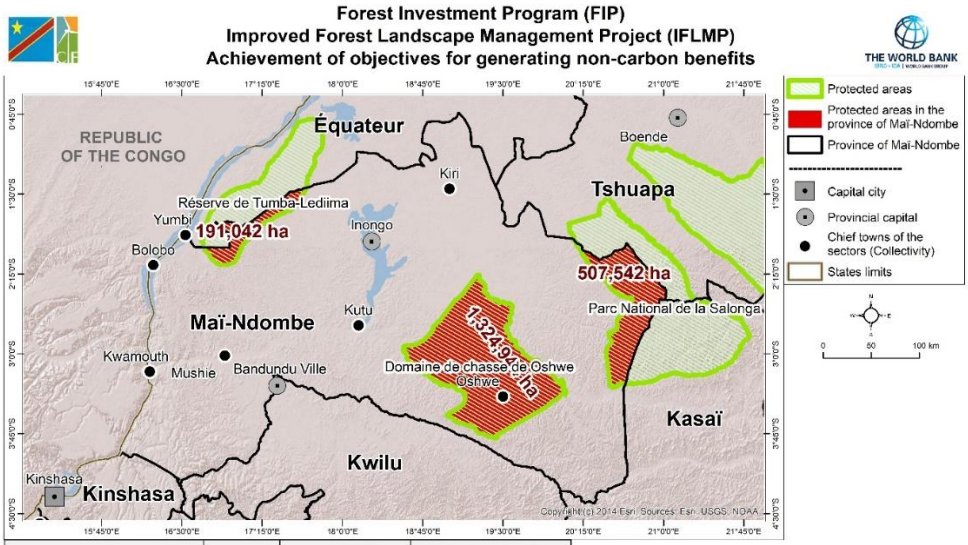
limited deforestation observed in the southern part, but human populations in and around the reserve are growing and anthropogenic pressures are increasing.

PIREDD Mai-Ndombe has supported:

- institutional strengthening of ICCN;
- establishment of co-management structures with local communities (consultations and genuinely participatory planning and implementation of reserve management);
- delimitation of the reserve and preparation for a possible new decree to address overlapping jurisdictions with forest concessions and other outstanding issues; and
- investments in reserve infrastructure and coverage of operational costs.

Figure 2. Protected Areas within the Jurisdiction of Mai-Ndombe



Surface area of protected area in Maï-Ndombe province	Area (ha)	Area of Maï-Ndombe Province (ha)	Ratio of protected area to province of Maï-Ndombe (%)
Salonga National Park	507,542	12,724,300	4.0
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Tumba Lediima Natural Reserve	191,042	12,724,300	1.5
Total	**2,023,528**	**12,724,300**	**15.9**

Data source : Common Geographic Reference System (CGRS) www.rgc.cd
Geographic coordinate system WGS 1984
FIP, Kinshasa, february 2025.

Re/afforestation and rehabilitation

2.4 Total forest area re/afforested or restored (in ha) through the program

For the period 2019-2020, the condition of the land under restoration is as follows:

- Natural regeneration area: 9,936 ha of the PIREDD Maï-Ndombe;
- Savannah reforestation area (ha): 2,927.79 ha (of which 2,921.79 ha under PIREDD Maï-Ndombe and 6 ha under FA-FEM).

Financial and Private Sector Partnerships

2.5 Update on the CF Program Budget (as originally presented in the ERPD), with updated details on guaranteed (i.e., fully committed) financing, in US$

2.5.1. Detail the amount of finance received (including ER payments) in support of development and delivery of your CF program. Figures should only include secured

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finance (i.e. fully committed): ex ante (unconfirmed) finance or in-kind contributions should not be included:

Private sector investment in agriculture and forestry projects in the Democratic Republic of Congo (DRC) is challenging due to lagging profitability and lower returns than the commercial sector. This is mainly due to the lack of suitable banking services for these investments. As a result, PGLIF made public investments with a private developer under a co-financing model. In this model, the financial resources required for the development of one hectare are provided by both the private project developer and the UC-FIP. It is important to stress that the choice of this funding approach was driven by the desire to avoid fiduciary controls requirements for private sector accounting. FIP has contributed through results-based payments. Private sector engagement was a dedicated component of the Improved Forested Landscape Management Project (IFLMP, P128887) which set a foundation for the ERPA, allocated US$8 million under Component 2. Private sector actors were engaged through two main modalities. A total of 43 contracts were signed with private enterprises (mainly landowners engaged in forestry) covering 7,943 hectares of reforestation, with project subsidies incentivizing agroforestry investments on degraded lands — a pioneering approach to mobilizing private capital for forest restoration in DRC.

Amount (US$)	Source	Date Committed	Public or private funding?	ERP, grants, loans, other
14.2 Million	PIFs	8 October 2014	Public	Grant
30 Million	CAFI	July 18, 2017	Public	Grant
6.2 Million	The GEF	June 20, 2019	Public	Grant

2.5.2. Not including ER payments from the FCPF Carbon Fund, what is the value of REDD+ ER payments that your CF projects have received, and that your country has received overall? If no ER payments were received, please indicate by entering '0' in the table below.

The table below shows total REDD+ payments to date ($US)

	Total REDD+ payments received to date ($US)
Carbon Fund Project(s) (i.e. ER payments from sources other than the Carbon Fund)	$0
All Other national REDD+ projects	$0

2.5.3. How many formal partnerships have been established between your CF program and private sector entities? If no formal partnerships were established, please indicate by entering '0' in the table below.

Formal partnerships are defined as:

- The partnership is based on a written MoU (or equivalent), and/or
- The partnership involves tangible financial exchange/s, and/or
- The partnership involves tangible non-financial exchange/s (e.g. in-kind contributions)

It should be noted that in the case of the jurisdictional program, only one nested private project is involved. This is Wildlife Works Carbon (WWC) – ERA project which aims to protect 248,956 hectares of forest from industrial logging, unsustainable fuel wood extraction and slash and burn agriculture. The

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project is developed and managed in a joint venture by forest carbon leaders ERA-Ecosystem Restoration Associates Inc. and WWC LLC.

	Created in the last year (July to June)	Total to date
Number of private sector partnerships involving financial exchanges	1	1
Number of private sector partnerships involving non-financial exchanges	0	0

Other non-carbon benefits and additional information

Policy development

3.1. Is your CF program engaged in contributing to the development, reform and/or implementation of policies to help institutions/people/systems/sectors? Please provide information on the approach taken and any other relevant Indicators or outcomes.

The approval decree set forth in Arrêté No. 047/CAB/MIN/EDD/AAN/MML/05/2018 dated May 9, 2018, determines that the Government of DRC, as holder of the Mai-Ndombe ER Program, has an exclusive right to any ER that may be generated by the ER[i] Program. In line with the action plan proposed in the ERP agreement, work is underway to revise and operationalize the "approval" decree with the objective of resolving all outstanding issues[ii] that prevent the country from allowing the transfer of emission reduction titles in full compliance.

First, the Government, through the Ministry of Environment and Sustainable Development (MEDD), initiated a process of reform of the legal framework in place in order to provide a comfortable legal and institutional basis for the valorization of the emission reductions generated in the DRC. The option taken by the Government, through the MEDD, is to amend Law No. 11/009 of July 9, 2011, on the fundamental principles relating to environmental protection. The draft law to amend the latter law was presented by the MEDD to the Government and was adopted on February 3, 2023. The revised law established the Carbon Market Regulation Authority (CMRA), whose organization and functioning are established by decree of the Prime Minister and constitutes a legal basis for defining a procedure for the certification of carbon projects and related transactions.

Capacity development

3.2. Is your CF program involved in training, education or provision of capacity building opportunities to increase the capacity of institutions/people/systems? Please provide information on the approach taken and any other relevant Indicators or results.

Stakeholders involved in the implementation of project activities have benefited from regular capacity building by project experts. The technical departments (Agriculture, Environment, Rural Development, Land Affairs, and Interior) involved in the implementation of project activities have signed 20 collaboration agreements between these government agencies, 5 per territory. These agreements defined the specific areas of collaboration, the procedure for mobilizing technical services, the definition of mutual tasks, deliverables, and the conditions for supporting teams in project implementation.

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The teams benefited from capacity building on project approaches and actively participated in the implementation and monitoring of activities at the community level. The objective of this capacity building was to enable the teams of the various technical departments involved to sustain the project's innovative approaches to natural resource management beyond the implementation period. In addition, the project supported the administrative teams of the 4 territories (Oshwe, Kiri, Inongo et Kutu) in the process of elaborating territorial development plans in which aspects related to natural resource management are considered. PIREDD has also contributed to building the capacity of local structures at all levels, such as LDCs, farmer organizations and Territorial Rural Agricultural Councils (CARTs), to sustainably manage natural resources.

[i] See ERPD and MEDD's September 18, 2018 letter to FMT regarding DRC's ability to sell ER titles

[ii] The approval decree approved in 2018 did not include the procedure manual as an annex, although it was referenced therein. In addition, the scientific committee to review REDD+ projects for accreditation has never been established and the REDD+ Registry has not been fully operational. As a result, a revision of the approval decree and its procedures manual is required to ensure the transfer of emission reductions in accordance with the requirements of the ERPA

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